

# The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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## Brotherhood's Compound Engine.

Most of our readers are familiar with the Brotherhood three-cylinder engine, which we have several times had occasion to mention. Recently Mr. Brotherhood has made a modification of his engine, giving it an annular cylinder and compounding it. Messrs. Fland and A. Cohenet, of Paris, who have a show of small steam engines at the Paris Exhibition, exhibit among them a compound engine designed by Mr. Brotherhood, of the type we have mentioned. Our engraving shows a longitudinal and cross section. Of this engine *Engineering* says:

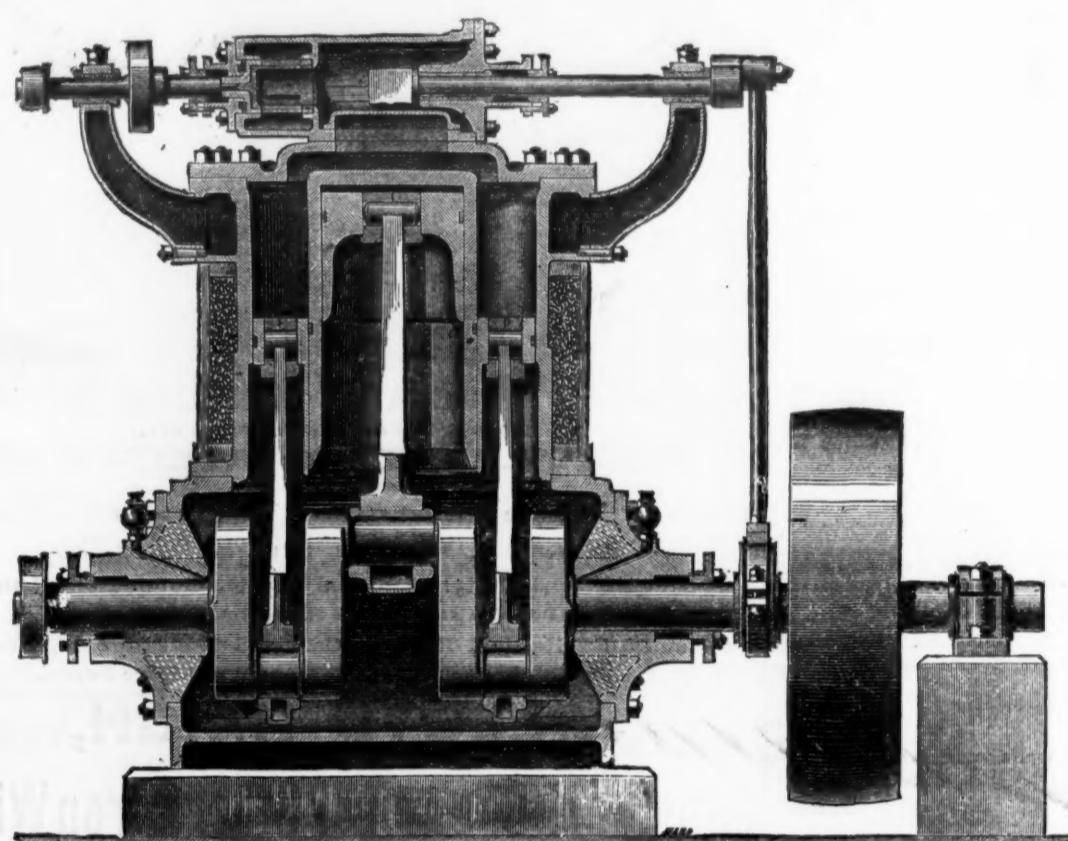
"The engine, which is very simple in its

finding gold, wrote to a friend, Cheong Yum, in 1848, about the new country. Cheong Yum immediately came to the Pacific slope, but, before doing so, told a number of his countrymen of the discovery of gold in America. It was then that the Chinamen began to flock to the Pacific coast. There were at that time no steamers to bring them, so they came in sailing vessels. In 1849 the Argonauts began to arrive from the East, and at that time the Chinese influx was a mere drop in the bucket. Within the next four years the arrivals of Mongolians became more frequent and in larger proportions, so that in 1852 there were 4000 on the coast, 2000 of whom lived in San Francisco.

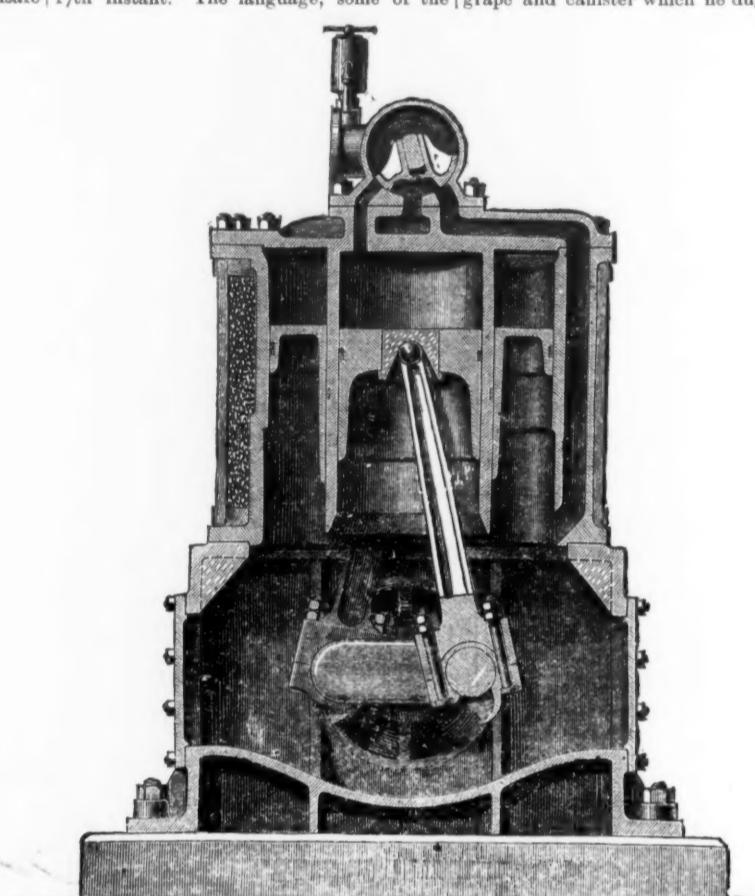
double easily overcome an inequality in the floor. The weight being thus taken in a direct line, the pivot has merely to hold the caster in position, but not to sustain any of the friction or strain caused by the weight; consequently, a very heavy weight can be put upon the caster without causing any side friction. These casters can be applied to a great variety of uses, from the lightest to the heaviest. Out of a great variety of shapes and styles made, we show two in the accompanying illustration, one having a flat plate and the other a pin. The large sizes are especially adapted to heavy articles like refrigerators, large machinery, book cases and similar objects usually considered unsafe

coast or in the westerly current toward Hawaii. It is not uncommon to find the crew dead, although at least 112 persons are known to have been saved by captains on the Pacific, and instances of men landing from the junks are traditionally known. These facts are of special interest, as possibly explaining the origin of the American Indian. On this subject much has been written, and there is reasonably good evidence going to show that the Indian may be a descendant of shipwrecked Japanese brought over here hundreds of years ago by the same current that swept to the coast of California the junk found by the schooner Parallel on the 17th instant. The language, some of the

tioned as having seen Gen. Washington on the grounds. When the General visited the furnace he placed a Mr. Berkshire as manager, who took possession in behalf of the government. No doubt the Berkshire hills were named after him. In the lapse of time it was found that the water power was insufficient for working the furnace, and all the movable machinery was removed to Robesonia and a furnace started there, which has been in existence ever since. There are still many relics about the blacksmith shop of George G. Sellers, adjoining the furnace, such as stove plates bearing the date 1772, and shell, grape and canister which he dug out of the



Longitudinal Section.



Cross Section.

BROTHERHOOD'S COMPOUND ENGINE, AT THE PARIS EXPOSITION.

construction, is of the annular compound type, with cranks opposite each other. It has only three principal castings—the lower frame, the low-pressure cylinder body and the high-pressure cylinder cover and high-pressure cylinder, which are cast in one. The valve chest is bolted on to the cylinder cover, in which the (very short) ports are cast. It contains a cylindrical throttle-valve, worked by a governor of the form commonly used by Mr. Brotherhood, and a main valve, somewhat of the Corliss type, worked by single eccentric. As will be seen from the engravings, the action of this valve does not essentially differ from that of a common valve working on a cylindrical face. The cylinders are single-acting only, and the one valve serves for the whole steam distribution. The exhaust steam is allowed to pass down to the space under the piston on its way to the condenser or to the open air. A reasonably early cut-off can be thus easily obtained in the smaller cylinder, the other taking steam, of course, during its whole stroke.

The design of the connecting rods resembles that used in Mr. Brotherhood's three-cylinder engine, the rods here, as there, being always in compression. A three-throw shaft is used, the bearings being in covers in the lower casting, and each has a stuffing-box and gland at its outer end. The spring rings for the inner side of the low-pressure piston are, it will be seen, placed in a recess in the cylinder instead of in the piston, the low-pressure piston being made with a deep trunk, against the interior of which the rings can work. This is a very neat arrangement, and gets rid of a trouble which has been previously experienced in the packing of annular pistons.

The engine exhibited at Paris differs slightly in the arrangement of the valves and governor from that shown in our drawings, which represent a somewhat improved design used in the machines now in course of construction. It has cylinders of 0.25 and 0.50 meter (9.84 in. and 19.68 in.) diameter respectively, and is intended to indicate 50 horse-power when running at 50 revolutions per minute. The Paris engine runs very quietly; it is neat and simple in design, takes up little room, and is well constructed. It has not yet been sufficiently long before the public, however, to allow any opinion to be formed as to its working merits.

The first Chinaman who came to America, according to the San Francisco Chronicle, was Chum Ming, in 1847. He was a native merchant of Nai Sang, a province of Canton, intelligent and enterprising. He went into the mountains, and,

as soon as the tide of Chinese emigration had set in toward California, the Young Wo and the Kong Chow, the first two of the present Six Companies, began the business of aiding the shipments.

## Martin's Patent Caster.

Messrs. Tucker & Dorsey, of Indianapolis, Ind., are manufacturing and introducing an improved article of cabinet hardware known as Martin's Patent Caster. It is

when placed upon casters. The use of two wheels obviates the "digging" action, always incident to turning a broad wheel in a small circle, or upon its center, and which is so very destructive to carpets and floors. The manufacturers claim special advantages for these casters upon sample stoves, which by their use can be moved about even over rough floors with great facility.

The report from San Francisco of the finding of a Japanese junk off the coast 100

habits, religious beliefs and ceremonies and physical characteristics of the Indian and Japanese of ancient times have points of resemblance which make it probable that the Indian and Japanese are closely related.

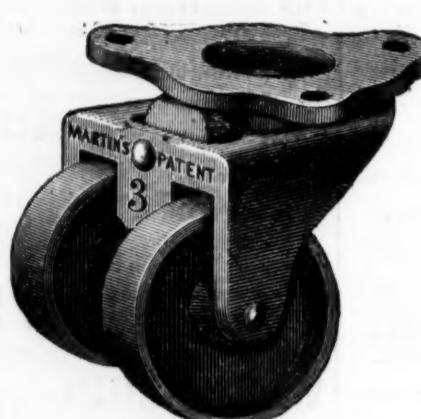
**The First Charcoal Furnace in Pennsylvania.**—Col. Jos. L. Stichter writes as follows to the *Reading Times and Dispatch*: From the best traditional information obtained, it appears that the furnace was built about the opening of the eighteenth century

furnace bank. The house is still standing in which Washington stayed over night. It is to be regretted that no precise account is obtainable of the exact date of the erection of the furnace, but it has been sufficiently authenticated that it was built by Richard Patten, a British subject, who afterward sold it to George Eage, of Robesonia.

**Advance in Freights to the Far West.**—A large advance in the rate of freights for first-class goods over the Union and Central Pacific Railroads is announced. Also a dispatch from Chicago states that the general managers and freight agents of the railroads leading to the Eastern seaboard from Western points, held a meeting in that city July 31, for the purpose of regulating the Eastern-bound freight rates. The rates adopted a day or two before, to take effect August 1, were approved. The rates were then further advanced, making the grain rates on the basis of 25 cents per 100 lbs. from Chicago, and fourth and special classes on the basis 30 cents. This resolution elicited a long and heated discussion. It was, however, adopted, and on and after August 5, the rates will be as follows:

FOURTH CLASS.		
	Grain. Cents.	Flour. Cents.
Chicago to Baltimore	27	22
Washington	27	22
Philadelphia	28	23
New York	30	25
Boston	35	30

All articles that have been taken at grain rates will be included hereafter in the fourth class. This makes a further advance in grain of 5 cents per 100 lbs., and 10 cents in meats, &c., that have heretofore taken grain rates. Charge of 2 cents per 100 lbs. will be made on all property for which cars are sent to packing and slaughter houses in Chicago. When a refrigerator car is furnished for cured meats an extra charge of 10 cents per 100 lbs. will be made.



MARTIN'S PATENT CASTER.



constructed with a view to carrying heavy weights for years without injurious wear, and reducing to a minimum the friction which gives so much trouble with many forms of casters in general use.

The Martin caster consists of two ordinary wheels in a single frame loosely pivoted to the plate attached to the furniture. Above and between these two wheels is an anti-friction roller with its axis at right angles to that of the wheels. The whole weight, of course, rests directly upon this friction wheel, and is taken in a vertical line through the center of the axes of the two wheels.

The friction wheel allows the caster to turn with ease, even when heavily loaded, while the bearing wheels being

miles north of that port, is only one of many instances going to show the possibility of this continent having been peopled by Japanese drifted to our shores. The Kuro Shiro, or Black Stream of Japan, flows up past Formosa, Japan, the Kurile and Aleutian Islands, Alaska, Oregon, California, and thence bends westward to the Sandwich Islands. A junk left in the Kuro Shiro would, if not stranded or sunk, make the circuit from Japan to Hawaii. Of 40 junks known to have been thus carried across the Pacific between 1782 and 1876, 19 stranded or their crews landed on the Aleutian Islands, 10 in Alaska or British America, 3 on the coast of the United States, and 2 on the Sandwich Islands. The others were picked

by British capitalists, and was first called "Rockberry Furnace." Gen. Washington and his body guard visited the furnace September 17, 1777, for the purpose of hiding all the munitions of war that were then upon the furnace bank, to prevent the enemy from taking possession. It appears that this furnace was largely engaged in manufacturing cannon and shell. Elizabeth Hain, of the Hain family, who was upon the ground when Gen. Washington visited the furnace, used to state in her lifetime that stacks of cannon balls were piled around the furnace as large as grain stacks. Tradition informs us that Jonathan Minnich, who was a blacksmith at the furnace, also saw Gen. Washington. Ishmael Farmer, who was one of the teamsters of the furnace, was also men-

third.

In order to facilitate the transportation of coffee and to preserve it longer, it has been suggested in Germany that it be compressed. For this purpose it is subjected to a pressure of from 40 to 70 atmospheres in suitable cast-iron molds. The coffee comes into the market in a form resembling chocolate, divided as the latter is by ribs. The interior surface of the molds is highly polished, which makes the outer crust of the compressed coffee sufficiently smooth and hard to prevent the escape of the ethereal oil of the coffee. The volume of the coffee thus prepared is reduced to less than one third.

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THE ANSONIA  
Corrugated Stove Platform.  
SEE PAGE 9.

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THE ANSONIA  
Corrugated Stove Platform.  
SEE PAGE 9.

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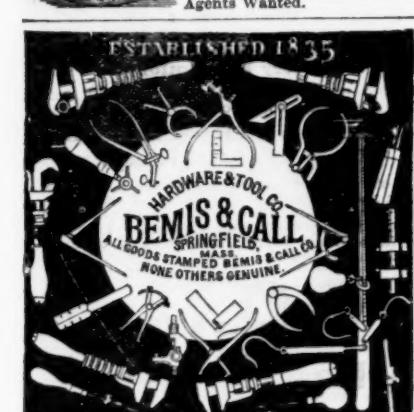
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#### Steel for Car Axles.

To the Editor of *The Iron Age*: Referring to Mr. Brinley's paper on "Open Hearth Steel for Axles," in your issue for July 4th, permit me to suggest that something may be said, and ought to be, in reference to other standard methods of making steel, so that a more complete view may be had by those interested in this whole field of manufacture, one of the most important now occupying the attention of steel makers.

Even if it were true that the uncertainties of making mild crucible steel have been found to be very great, they certainly have not proved insurmountable. This may be clearly seen from the fact that boiler plate of the most acceptable quality has been, and is daily, melted in crucibles, and that a score of other grades can be made at will in the same way and of any required kind or uniformity in quality. So, too, with the Bessemer process, it has been found practicable to make, in the English works particularly, a quality of boiler plate that shall meet every required test, whether in respect to its tensile strength or its stretching, and, above all, in respect to its peculiar property of not hardening when heated to redness and quenched in water.

If, then, in the steel manufacture, as in most other things, the greater really and completely includes the less, it is hardly just to ignore the possibility of making good axles out of crucible steel, even if the cost of melting may be materially in favor of the open-hearth furnace. Still less is it a judicious thing to forget that as soon as the present rush after steel rails is past, the enormous capacity of the Bessemer works will, most assuredly, be turned in part on to axles, and that, too, as ample experience has shown, without the slightest doubt of the

which the hands are attached would not throw a shadow often mistaken for one of the hands themselves. The project recommends itself to smaller cities unable to bear the expense of a costly tower clock with illuminated face.

#### Donohue's Improved Wrench and Pipe Cutter.

The accompanying illustration represents an improved wrench and pipe cutter, patented by Mr. Bernard Donohue, 50 John street, New York. The object of the invention is to produce a combined tool which can be employed as a nut wrench, pipe wrench or a pipe cutter at will. It will be seen from the cut that the jaws upon one side operate in the same manner as those of the well-known "monkey wrench." On the opposite side a dog or pawl, carried by the movable jaw, works against the stationary jaw and forms the pipe wrench, which is capable of use upon pipes of a wide range of sizes. The dog, which is also the movable jaw of the pipe wrench, is slotted to receive the small cutter wheel shown below the wrench. Bearings hollowed out across the face receive the journals. The spring jaw, or dog, has a very important advantage in that it holds the jaw against the pipe, keeping it in place so as to prevent the tendency to crush the pipe when the pressure is applied, a fault very common in pipe wrenches.

#### Condition of the Rural Population in the Rhone Department of France.

Mr. Peixotto, United States Consul at Lyons, sends the following report of the condition of the agricultural laborers of the Department of the Rhone:



DONOHUE'S IMPROVED WRENCH AND PIPE CUTTER.

result of any tests that may be required or suggested for the product.

The "open hearth," or Siemens process, shares with the Bessemer this very important advantage in cost over the crucible method, that by it the metal may be melted in large single masses or "heats" of from 5 tons to 10 or 15 tons at a time, from which ingots weighing from 1,800 lbs. to 3,000 lbs. or more may be cast at pleasure, and for many purposes. There is great advantage in the subsequent handling of the metal in these large ingots, even though the final product of their working may be axles or smaller and lighter pieces. It should be noted also in this connection that the open-hearth process has this advantage (which is sometimes of material importance) over the crucible and the Bessemer also, that in the large open-hearth furnace employed for melting, the metal can be kept in a melted condition for any required time, so that its quality can be determined and accurately modified at pleasure to suit the slight differences that may be found to exist in the materials or in the working of the furnace itself. On the other hand, however, those who are skillful in the use of the Bessemer converter long ago reached a striking degree of excellence in their management, and hence in the quality and uniformity of their product, notwithstanding the very brief time that the metal remains under treatment in the converter, and they are daily advancing in this direction. It is perfectly certain that the open-hearth steel makers may expect at an early day a close contest from the Bessemer converters in axles as well as in many other classes of material, a contest, too, in which not an iota shall be waived in the requirements of any standard of quality.

Another phase of the manufacture of steel axles ought to be mentioned and emphasized, and that is the strong probability that at a comparatively early day they will be produced by casting direct to pattern and very closely to their finished sizes. This possibility, and even certainty, has been clearly set forth recently in *The Metallurgical Review*, in Mr. Holley's paper on "Solid Steel Castings," in the statements there given of the practice in the French works at Terre-noire. Without entering at length into the details of this most interesting branch of the steel manufacture, it may be sufficient to note that by casting axles thus direct to size the wear and tear of hammering and swaging them may be wholly saved, and that there will thus be the least possible expense and loss or waste in turning and finishing them.

It may be a fair question, too, whether with a steel axle made in any way a really useful purpose may not be served by an actual hardening, or, with very mild steel, by a case-hardening of the surface of the journal. It is more likely that the wear of the axle results from the dust that finds its way into the axle box than from any seams in the material, and hence, even with the perfect finish of a steel axle, a harder bearing surface may aid in preventing wear or cutting.

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18 11X1/4 71.00  
  
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3 11X1/4 62.00  
  
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No. Size of Rolls. Price per doz.  
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#### Donohue's Improved Wrench and Pipe Cutter.

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#### Condition of the Rural Population in the Rhone Department of France.

Mr. Peixotto, United States Consul at Lyons, sends the following report of the condition of the agricultural laborers of the Department of the Rhone:

Agricultural laborers are divided into two classes, those who are engaged by the year and live on the farm and those who work by the day. Farm laborers who live in the farm buildings receive, in addition to food and lodging, wages partly paid in money and partly in kind. Those of the latter category earn about 150 francs or \$30 a year. Those of the former receive: Men (working 15 hours) from \$80 to \$100 a year; women, from \$55 to \$65 a year. It is estimated that the cost to the employer in supplying food, shelter, &c., is about \$35 a year. The number of days of labor is for men, 200; women, 120; children, 80. Hours from 13 to 15 per diem.

There are a certain number of laborers who supplement their revenues by the prosecution of a secondary industry, such as weaving, wood-cutting, sawing, wooden shoe-making, cask-making and building. Such an accessory industry may increase their earnings by about \$30 a year. It is calculated that from 8 to 10 per cent. of the agricultural class are engaged in some trade. The married farm laborer who finds himself may earn \$150 per annum, divided thus: Men's wages, \$80; women's wages, \$30; three children's wages, \$40; total, \$150. The cost of living to such a family is calculated as follows: Lodging, \$10.50; bread, \$55; vegetables, \$8.25; meat, \$10; wine, beer and cider, \$7; milk, \$5.25; clothing, \$25; groceries, \$10; fuel, \$8; taxes, \$2; total, \$141. Leaving a balance in his favor of \$9.

It is estimated that there are 9,000,000 families in France, 1,000,000 of which are in easy circumstances. Of the 8,000,000 belonging to the industrial classes, 3,000,000 are inhabitants of towns. Land is very equally distributed among the bulk of the population, and the same is the case with personal property. The rural population is estimated at 70 per cent., the urban at 30 per cent. In 1846 the rural population was 75.58 per cent., the urban 24.42 per cent., showing in France, as elsewhere on the Continent and in the United States, an increasing tendency of population toward cities. Since 1861 the urban population has augmented largely, the rural decreased. There is some tendency the other way at present. Broadly stated, I regard the condition of the agricultural classes in the United States as much superior to that of France, and I may add (from observation and study) to those of Germany, Italy and Austria-Hungary. The agricultural laborer in the United States is better fed and better educated, he is thus physically, mentally and socially the superior of the same class in the countries above mentioned. The peasant class of France, though as a rule ignorant, are remarkably independent. They know how to save, and are therefore generally well to do. This is especially the case with small farmers.

From a comparison of tables made before the Franco-German war and from information derived, as I believe from reliable sources to day, I am of the opinion that the farm laborer receives higher wages than he did five years ago, but the cost of living has increased in quite a large proportion. As a general rule and viewed from a purely material standpoint, the French farmer, small as well as great proprietor, is better off than his brother agriculturist in America.

From such observation and opportunity as I have had, I believe there is more manual labor performed here than in the United States. Consequently, it appears to me that there is a good field (I refer particularly to this and adjacent departments) in this portion of France for the introduction of agricultural machines and implements of husbandry, and our American manufacturers might do well to send their agents and cultivate this business.

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100,000 Tons of Iron and Steel Rails, Splice Bars, &amp;c.

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Or J. S. KENNEDY &amp; CO., New York Selling Agency, 41 Cedar St., N. Y.

**THE PHOENIX IRON CO.,**  
410 Walnut Street, PHILADELPHIA.

Manufacturers of

**CURVED, STRAIGHT AND HIPPED**  
**Wrought Iron Roof Trusses, Beams, Girders & Joists,**

and all kinds of Iron Framing used in the construction of Iron Proof Buildings.

**DECK BEAMS, CHANNEL, ANGLE AND T BARS**

curved to template, largely used in the construction of Iron Vessels.

**PATENT WROUGHT IRON COLUMNS, WELDLESS EYE BARS,**

For Top and Bottom Chords of Bridges.

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Manufactured from the celebrated OTIS STEEL

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**STANDARD.**

Quality and efficiency fully guaranteed. Prices as low as any of the same quality.

We manufacture

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**JAS. ROWLAND & CO.,**

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Manufacturers of the

Anvil Brand Refined Merchant Bar Iron.

Also, the James Rowland &amp; Co. Kensington Nails, cut from their Refined Anvil stock. Also, Plow and Cultivator Steel, Rounds, Squares, Flats, Bands and Hoop Iron.

Correspondence with Dealers solicited.

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Office, No. 265 S. Fourth St., Philadelphia. Agents for the sale of Glamorgan Pig Iron.

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MANUFACTURERS' FOUNDRY SUPPLIES.

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AMERICAN LEAD, ANTHRACITE, SHOVELS, BRASS,  
GRAPHITE, CHARCOAL, BRUSHES, CHANDELIER,  
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**H. L. GREGG & CO.,**  
Ship Brokers & Commission Merchants,  
Importers of**Old Iron, Metals and Rags.**

Freight engagements made to all parts of the world.

Marine insurance effected in reliable offices.

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For Iron and Steel Rails, Car Wheels, Boiler and

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Equipment.

Old Rails, Axles, and Wheels bought and sold.

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CENTRAL IRON WORKS, - Harrisburgh, Pa.

**Boiler Plate, Tank Iron, &c.,**

PIG, BAR AND RAILROAD IRON,

**Old Rails, Scrap, &c.**

STORAGE WHARF &amp; YARD,

DELAWARE AVENUE ABOVE CALLOWHILL STREET,

connected by track with railroad

Cash advances made on Iron.

**The Iron-Masters' LABORATORY.**

Exclusively for the

Analysis of Ores of Iron, Pig and Manufactured Iron, Steels, Limestone, Clays, Slags and Coal for Practical Metallurgical Purposes.

No. 339 Walnut St., Philadelphia.

**J. BLODGET BRITTON.**

This laboratory was established in 1866, at the instance of a number of practical Iron Masters, expressly to afford prompt and reliable information upon the chemical composition of the substances above mentioned, for smelting and refining purposes. The object being to make it at once a convenient, practically useful, and comparatively inexpensive adjunct to the Furnace, Forge and Rolling Mill.

**CHARGES TO IRON WORKS.**

For determining the per cent. of Pure Iron in an ordinary Ore.	\$4.00
For the per cent. of Pure Iron, Sulphur and Phosphorus in do.	12.50
For each additional constituent of usual occurrence.	1.50
For those of unusual occurrence or difficult to determine, the charge must necessarily depend upon circumstances.	7.00
For determining the per cent. of Sulphur or Phosphorus in Iron or Steel.	5.00
For each additional constituent of usual occurrence.	2.00
For the per cent. of Carbonate of Lime, and insoluble Silicious Matter in a Limestone.	10.00
or each additional constituent.	2.00
or the per cent. of Water, Volatile Combustible Matter, fixed Carbon, and Ash in Coal.	12.50

For determining the constituents of a Clay, Slag, Coal, or Ash, Coal, the charged will Slag, H moving it in a direction to cut off steam, whereby the main valve becomes a regulating cut-off valve.

For a written opinion or letter of instruction the charge must necessarily depend upon circumstances.

Printed Instructions for obtaining proper average samples for analysis furnished upon application.

**BOSTON ROLLING MILLS**

Manufacture

Extra quality small rods, from best selected Scrap Iron.

**SWEDISH AND NORWAY SHAPES,**

Nail and Wire Rods, Also,

**Horse Shoe Iron, Hand Made****Horse Shoes & the Boston Horse Shoe.**

BOSTON ROLLING MILLS, W. B. ELLIS, Treas.

Office, 17 Battery-march St., Boston.

**BRADLEY, REIS & CO.,**

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Manufacturers of every description of

**PLATE & SHEET IRON**

OFFICE, at Works.

**Bonnell, Botsford & Co.,****Iron, Nails & Spikes.**

YOUNGSTOWN, OHIO.

**Spooner & Collins,**

COMMISSION AGENTS.

**PIG IRON**

Blooms, Bar, Sheet &amp; Hoop Iron.

217 N. Third St., St. Louis.

**ANVIL NAIL CO.**

We desire to call the attention of the trade to our new manufacture of

**Steel Horse Shoe Nails,**

made from metal prepared in the Martin-Siemens Furnace by our PATENT process, which produces a nail having all the requisites for a

**PERFECT HORSE SHOE NAIL.**

The well-known desirable properties of a perfect nail are, that the point should be sharp, the shank stiff, to drive without crippling under the hammer, soft enough to clinch readily, while sufficiently tough to avoid all danger from the "drawing the clinch" or breaking the neck under the head. These properties we claim for the

**"ANVIL HORSE NAILS."**

In the process of manufacture the metal is compressed under the head, which gives the nail great strength where it is required (between the shoe and hoof), and the cold rolling gives it a stiffness attained in no other way, while the quality of the metal used insures a clinch and point unsurpassed by any nail ever offered in the market.

Samples and prices sent on application.

**ANVIL NAIL CO.,**

65, 67 and 69 Washington St., New York.

**BORAX.**

Concentrated Borax in sacks.

Selected concentrated Borax in barrels.

Refined Borax in cases.

Pulverized Borax in barrels.

Pulverized Borax in powdered and half pound packages.

Bottled Borax for Messrs. Smith Bros., OWNERS OF THE MINES, we are enabled to sell at the lowest prices.

WM. T. COLEMAN &amp; CO.,

New York, 180 Pearl Street.

SAN FRANCISCO, CAL., cor California and Front Sts.

**New Patents.**

We take the following abstract of new patents, recently issued, from the official record:

**CARPENTERS' PLANES**

To L. Bailey, Hartford, Conn.—April 30.—The bit is adjusted longitudinally by a screw bearing both a right and a left-hand thread, thus forming a differential screw.

1. The double-threaded adjusting screw, f, made in one piece, and having a right-hand thread working in its support or bearing, and a left-hand thread working in the bit carrying nut, in combination with a plane body and bit.

2. The ring-pipe b, having the valves d e f g, combined with the measuring vessels D E, said ring-pipe being made larger in diameter in its upper than in its lower half.

3. The combination of the ring-pipe and its valves d e f g with the toothed segments u, v, and with the toothed wheel B and its crank C, said crank moving between stops h and i.

4. The combination of the crank-spindle n with the pinion o, slides p q, pawls r s, ratchet wheel F, and index G.

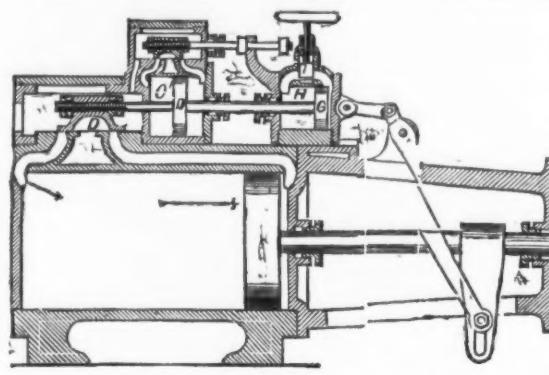
**Wealth and Science.**

In the Popular Science Monthly Prof.



Younmans has an article from which we take the following interesting passage in regard to Cavendish the chemist, and the American method of considering wealth:

An historical illustration will perhaps bring out more clearly this view, which is now coming to be regarded as so peculiarly American. There lived in England, in the last century, a man of science named Henry Cavendish, who was born in 1731 and died in 1810. He was a gentleman of fine cultura-



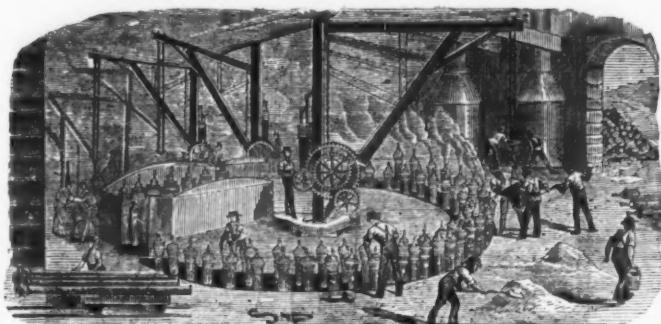
## THE BEST KITCHEN AND TOILET WARE.

It is made of Decarbonized Iron and Covered with a Perfect Enamel of Unquestionable Purity.



Its Merits have been tested and are vouched for by the Foremost Chemists and Experts in the Land.

MANUFACTURED ONLY BY THE St. Louis Stamping Co., St. Louis, Mo. Branch Office & Salesroom, 57 Beekman Street, New York. PRICE LISTS, DISCOUNTS AND TESTIMONIALS FURNISHED THE TRADE.

McNEALS & ARCHER,  
BURLINGTON, N. J.CAST IRON PIPES  
FOR WATER AND GAS.

Flange Pipes.

General Foundry Work.

Light Castings and Metal Patterns  
A SPECIALTY.TAYLOR & BOCCIS,  
Iron Founders.

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CORRESPONDENCE SOLICITED.

Will make estimates on completed work when desired.

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DECORATORS.

LIGHTNING HAY KNIVES,  
WEYMOUTH'S PATENT.

This knife is the best in use for cutting down hay and straw in mow and stack, cutting fine feed from bale, cutting corn stalks for feed, cutting peat and ditching marshes.

The blade is best cast steel, spring temper, easily sharpened, and is giving universal satisfaction. A few moments trial will show its merits, and parties once using it are unwilling to do without it. Its sales are fast increasing for export as well as home trade, and seems destined to take the place of all other Hay Knives.

They are nicely packed in boxes, one dozen each, of 50 lbs. weight, suitable for shipping by land or water to any part of the world.

Manufactured only by

## Hiram Holt &amp; Co.,

East Wilton, Franklin Co., Maine.

For sale by the Hardware Trade generally.

SEMPLE &amp; BIRGE MFG. CO., Agents at St. Louis.

OFFICE OF

## F. HABERMAN,

MANUFACTURER OF

Stamped, Plain and Japanned  
TIN WARES,

AND

Patent Corrugated Bottom Coal Hods,  
294 PEARL STREET,

NEW YORK, Aug. 1, 1878.

TO THE TINWARE, HARDWARE AND STOVE TRADE—GENTLEMEN: I am pleased to inform you that my new and greatly varied Price List is now completed and ready for distribution, and will be sent on application to any dealer.

The most important feature of this List is, the goods are all distinctly classified, prices and discounts named on same, a matter the trade will appreciate, as it avoids the constant necessity of inquiring for quotations on goods outside the regular line. Awaiting your favorable replies, I remain, yours, &c.,

F. HABERMAN.

## “WROUGHT BUTTS.”

SEND FOR PRICES TO

The McKinney Mfg. Co.,

(Works, Allegheny City, Pa.  
P.O. Address, Pittsburgh, Pa.)

## Southern Advertisements.

## Southern States Coal, Iron &amp; Land Co.

LIMITED,

## ENGINEERS, IRON FOUNDERS &amp; BOILER MAKERS,

Coal Miners and Fire Brick Manufacturers.

The Only Makers in the Southern States of  
WASHED FOUNDRY COKE,  
Free from Slate and Sulphur.Machine-Made Brick, Limestone, Lumber and Shingles.  
FARMS TO LET.  
Apply to the HEAD OFFICE, South Pittsburg, Tennessee.W. A. HOSKINS,  
DEALER IN  
MINERAL LANDS,  
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Offers for sale, at very low figures, some of the most valuable Charcoal and Coke Properties within the district. Full particulars furnished on application.

Vulcan Iron & Nail Works,  
Chattanooga, Tenn.MANUFACTURERS OF  
BAR IRON, NAILS, RAILROAD SPIKES, FISH BARS AND BOLTS BRIDGE  
AND CAR BOLTS, AND FORGINGS GENERALLY.ROANE IRON COMPANY,  
Manufacturers of and Dealers inPig and Railroad Iron.  
CHATTANOOGA, - - - - - TENN.WASON CAR & FOUNDRY COMPANY,  
Chattanooga, Tenn.Manufacturers of  
RAILWAY FREIGHT CARS, Car Wheels and Castings.

## TENN. COAL &amp; RAILROAD COMPANY,

A. M. SHOOK, General Manager, - - - Tracy City, Tenn.

Proprietors of the Sewanee mines, capacity of 50,000 bushels of coal and coke per day. Several important institutions of learning, including the University of the South, also the celebrated Beersheba Springs, are located upon the line of this Railroad. Being also the proprietors of several extensive tracks of very fine lands, offer special inducements to colonists. Communications addressed to the General Manager will receive prompt attention.

T. J. BROWN,  
Rockwood, Tenn.  
Miner and Contractor of  
Fossiliferous Ores.

A superior article delivered at low figures at any furnace within the district or at any point on the Ohio River. Refer to Roane Iron Co., Chattanooga Iron Co., or S. B. Lowe, Chattanooga.

S. Whinery, Civil Engineer,  
CHATTANOOGA, TENN.

Late Division Engineer Cincinnati Southern Railway. We prepare plans and superintend construction of Bridges, Buildings, Roads, Roadsides, Water Works, Sewers, Canals and other public works. Examinations, location and construction of railway lines a specialty. Surveys, examination and reports made of mineral lands. Business attended to thoroughly and promptly. First-class references given.

S. B. LOWE,  
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Dealer in Charcoal and Coke Pig Iron for Foundry, Forge or Car Wheel purposes.

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**NEW AMERICAN FILE CO., Pawtucket, R. I.**

**AUBURN FILE WORKS,**  
Superior Hand-Cut  
**FILES AND RASPS,**  
MADE FROM IMPORTED STEEL. EVERY FILE WARRANTED.  
**FULLER BROS., Sole Agents,**  
89 Chambers and 71 Reade Streets, N. Y.

Granted for



**McCAFFREY & BRO.,**  
Pennsylvania File Works,

Fourth St., north of Columbia Ave., Philadelphia, Pa., U. S.

Established 1868.

**FILES & RASPS,**  
Best Cast Steel.  
HAND-CUT. Manufactured by  
**JOHNSON & BRO.**  
No. 1 Commercial Street, Newark, N. J.

ESTABLISHED 1860.  
**Chas. Spruce & Co.,**  
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**FILES AND RASPS.**

Every File warranted.  
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**O. Ames & Sons,** Shovels, Spades and Scoops.  
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We have also on hand a general assortment of Hardware.

Silver Medal.



Domestic and foreign buyers who are desirous of handling a superior File or Rasp should send us their orders. Gentlemen visiting the Exhibition Universelle in Paris are invited to examine our exhibit at D 3, American Section.

Highest Premium.

McCAFFREY & BRO. logo featuring a profile of a man.

Steam and Frost prevented on Show Windows.



### REVOLVING VENTILATORS

For everything (and every size), from a hat or cap to an exhibition building. Kittoens, Landries, &c., ventilated without draft. Durable, strong, without rivets or solder. Oiled for six months. Each one has stoppers. Retail price, size six inch diameter, \$1.00 and upwards; apparatus with which any one can cut circles in glass, 15 cents each.

**Protective Ventilators** avoid drafts, exclude dust, dampness, malaria, and germs of disease; adopted by hospitals, schools, institutions, &c.; applied to any window or room.

The Economy Weather Strip is perfect in every respect. By enlarging edges of rubber or felt, and making slot in molding to correspond (see engraving), we save all expense of molding. Once purchased it will last a lifetime, because rubber, etc., has only to be removed and the slot pieced out with new strips, and sliding is immediately restored.

By this method of securing rubber all uncertainty of fastening or undoing of glue or tacks is overcome.

Rubber supplied with enlarged edge and instructions to enable Carpenters, Carpenters, Builders, and fitters to make slots in Sashes, Doors, Moldings, &c., and thus make perfect Weather Strips.

No. 6.



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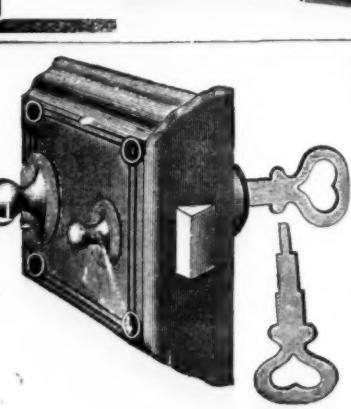
### Bolt and Rivet Clippers,

For cutting off the ends of bolts and rivets, on carriages, wagons, harness, &c.

SEND FOR A CIRCULAR AND PRICE LIST.

Liberal discount to the trade.

Chambers, Bro. & Co.,  
PHILADELPHIA.



### Extension Cylinder Night Latches.

KING'S PATENT, June 26, 1877.

Cylinders adjustable for doors from 1½ inch to 2 inches.

FRANCIS MANY,  
143 Chambers St., New York.

**THE GIANT PAD LOCK.**  
Manufactured by  
**THE SMITH & EGGE MFG. CO.**

(Centennial Award.)

"Superior in Every Respect."

This is one of the best selling Locks in the market, and affords the dealer a large profit. It is thoroughly made, and is of great strength—very handsome in appearance, and every Lock is warranted.

Orders solicited. Address as above.

Lock Box 105, Bridgeport, Conn.

THE VICTOR PLANES

Are the Best.



No. 10½ Circular Plane. Price, \$4.50 each.

The above cut represents L. Bailey's Patent Plane designed for Circular work, either concave or convex. It works on a straight line or in any degree of circle down to thirteen inches in diameter. Both ends are moved simultaneously with one hand and instantly secured at any desired angle. It is intended for the slow manipulations of a fine threaded screw in making the changes. If desired the connecting plate may be detached, when the ends will act independently, and be used for adjusting concave curves, which is sometimes necessary on special work, such as Stair Rails, &c. Every part is strong, simple, compact and at home. It has no competitor in practical utility.

W. BAILEY & CO., Bridgeport, Conn. PATENT ADJUSTABLE STANDARD TOOLS, comprising a large number

FIFTY different sizes and styles of VICTOR IRON PLANES, SPOKE SHAPERS, BOX SCRAPPERS, TRY SQUARES, FLUSH T HAMMERS, &c., adapted to every description of mechanical uses.

Amateurs will find their wants fully met in our list of Tools. On receipt of list price we will send to any address in the United States, by mail, postage paid, any article in our list excepting Nos. 5, 6, 7 and 8, which being too heavy will be expressed on same conditions. Always order by list number. Send for Illustrated Price List. Address

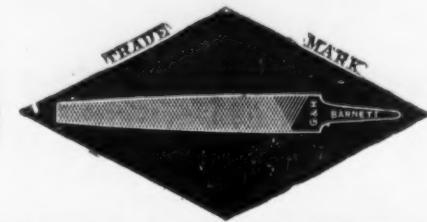
LEONARD BAILEY & CO.,  
Hartford, Conn.

HAMMOND'S Window Springs

Support and lock sashes of all kinds and sizes; are very convenient, simple and durable; are easily attached; never get rusty, always sure to hold sashes in most desirable positions. Lower spring can be used in connection with a door stay weight, as a lock. For sale by most Philadelphia wholesale houses. Circular plan of parts and full instructions.

Samples mailed to the Trade free.  
W. S. Hammond,  
Lewisberry,  
York Co., P.A.

### Black Diamond File Works.



Awarded by Jurors of Centennial Exposition, 1876, for "VERY SUPERIOR GOODS."

**G. & H. BARNETT,**  
39, 41 & 43 Richmond St., Philadelphia.

**CHARLES B. PAUL,**  
Manufacturer of **HAND CUT FILES.**

Warranted **CAST STEEL.**  
157 Tenth Street, Williamsburg, New York.  
Established 1863.



**HELLER & BROS.,**  
Newark, N. J.,  
Manufacturers of Celebrated  
American Hand-Cut Horse Rasps  
and Files.

For Sale by Iron and Hardware Dealers generally.

**AUSABLE HORSE NAILS**  
POLISHED OR BLUED.  
HAMMERED AND FINISHED



**The Ausable Nails**  
Are Hammered Hot,  
And the Finishing and Pointing are  
Done Cold,

Thus Imitating the Process of Making Nails by Hand.

Quality is Fully Guaranteed.

For Sale by all Leading Iron and Hardware Houses.

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**Philadelphia Screw Co.,**  
MANUFACTURERS OF

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**WOOD SCREWS**  
Of Every Description.

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Complete assortment at lowest market rates.

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Patents of Root's Wrought Iron Spiral Pipe.

The Abendroth & Root Manufacturing Company, sole owners of the Leutes Patent, and manufacturers under the same, of Root's Spiral Metallic Tubing, grooved and riveted seam, now offer for sale the territory west of the Rocky Mountains, in the United States, and the Letters Patent issued for Canada and all other foreign countries, together or separately, including complete working drawings or machinery (if required) for manufacturing.

The success of this company in the introduction of Spiral Tubing throughout the States and Territories east of the Rocky Mountains, is a sufficient guarantee that the business cannot be otherwise than successful wherever entered into.

For illustrated catalogues and full particulars address  
**ABENDROTH & ROOT MFG. CO.,**  
28 Cliff Street, New York.

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162 &

# A. FIELD & SONS,

TAUNTON, MASS.

MANUFACTURERS OF

## Copper and Iron Tacks, Tinned Tacks, SUPERIOR SWEDES IRON TACKS

For Upholsterers' Use, Saddlers' Supply Card, Clothing, etc., etc.

### American and Swedes Iron Shoe Nails.

Zinc and Steel Shoe Nails, Carpet, Brush and Gimp Tacks, Common and Patent Brads, Finishing Nails, Annealed Trunk and Clout Nails, Hob and Hungarian Nails, Copper and Iron Boat Nails,

Patent Copper Plated Tacks and Nails,

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Channel, Cigar Box and Chair Nails, Leathered Carpet Tacks, Glaziers' Points, etc.

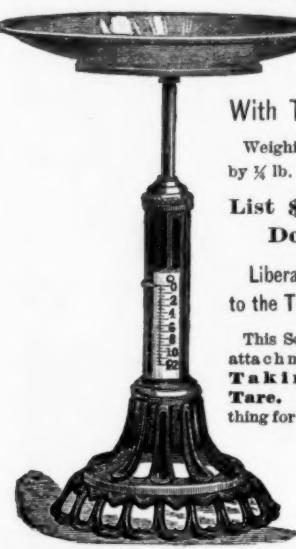
#### Offices & Factories at Taunton, Mass.

where may be found a full assortment of Tacks, Brads, &amp;c., for the accommodation of the New York Wholesale and Jobbing Trade.

Any variations from the regular size or shape of the above-named goods made from sample to order.

**Hoisting Machinery**  
MANUFACTURED BY  
CRANE BROTHERS MFG. CO.,  
Chicago.

#### The Upright Family Scale



With Tin Dish.  
Weighing 12 lbs.  
by 1/2 lb.

List \$16 per  
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Liberal Discount  
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This Scale has an  
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Manufactured by  
JOHN CHATILLON & SONS,  
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Manufacturers of

#### MEASURING TAPES.

Of Cotton Linen and Steel.  
For all purposes for which Tape Measures are required.  
Only manufacturers of

Paine's Patent U. S. Standard Steel  
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Pat. Spring Measuring Tapes  
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FINE TEMPERED STEEL SPRINGS,  
FINE TEMPERED STEEL HAND SAWS,  
From 1/4 inch wide upward. Warranted tougher than  
any other Hand Saw. Catalogues on application

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London, 1862; Oporto, 1865; Dublin, 1865; Paris,  
1867; Moscow, 1872; Vienna, 1873, and only  
Award and Medal for Self-Coiling Steel  
Shutters at Centennial Exhibition,  
Philadelphia, 1876.

**CLARK & CO.,**  
ORIGINAL INVENTORS AND SOLE  
PATENTEES OF

Noiseless Self-Coiling Revolving  
STEEL SHUTTERS,  
FIRE AND BURGLAR PROOF.

Also Improved

#### Rolling Wood Shutters

Of various kinds. Clark's Shutters are the **Best** and **Cheapest** in the world. Are fitted to new Tribune Building, Lenox Library, Delaware and Hudson Canal Co.'s Building, Transatlantic Steamship Co.'s new Dock, American News Office, &c., Posey County Court House, Mt. Vernon, Holt County Court, Oregon, Mo. Also to buildings in Boston, Cincinnati, Detroit, Janesville, Wis., Baltimore, Canada, &c. Have been for years in daily use in every principal city throughout Europe, and are endorsed by the **Lading Architects of the World.**

Office and Manufactory,

162 &amp; 164 West 27th Street, N. Y.

#### The Electric Light as Applied to Workshops, &c.

The *Gas Light Journal* publishes a long and valuable paper on the subject of the electric light as applied to workshops, which gives us another view of the subject from that usually presented by newspaper correspondents, and at the same time shows very plainly what obstacles exist to prevent its immediate and universal adoption:

Much has, during the last little while, been said and written about the electric light, and the probability of its rapidly or entirely superseding the use of coal gas and other means of artificial illumination, and many doubts and fears have been expressed and acted upon from time to time, causing relative fluctuations in the commercial value of undertakings such as those which most of us are in some way connected with; but, hitherto, the *ultimation* of each spasmodic action of this kind has been a return to the former and original value of the concerns alluded to. These periodical fluctuations may be principally attributed to the apparently successful experimental results which are from time to time brought before us by gentlemen in some cases devoting their entire times, means, and energies toward the further development of this kind of light, which has undoubtedly, by their efforts, been brought to a most wonderful stage of success. But experiments of this kind are generally conducted under circumstances the most favorable to a successful accomplishment of the end desired for the time being, and are usually wanting in many of the practical elements essential to a commercially useful and continuous application of the principles involved, so that when these principles come to be worked out in a manner calculated to be of practical utility, many failures, more or less complete, have to be encountered, and many difficulties to be overcome before the end aimed at is reached.

This seems to have been especially the case in the employment of electricity for producing light. Many and numerous are the methods that have been tried to create, by its agency, an artificial light superior to any that was previously known, and the most successful of these has undoubtedly been what is commonly known as the electric candle, which seems to be neither more nor less than two currents of electricity communicated to two tapers of carbon, the points of which are maintained at a regulated distance, while the carbon particles of each taper are being consumed to create the light desired. It is not my intention to draw any injurious comparisons between the light thus created and that generated from gas coal, for such a comparison is beyond the scope of this paper; my object is merely to give expression to some observations obtained from a view of such light in actual use in workshops of very considerable magnitude, and this I venture to do in the belief that such a sight is one of no little interest, and one which has, perhaps, not been personally inspected by all of us.

The apparatus which is used in producing the light I speak of is what is commonly known as Siemens', and is of considerable magnitude, as the space it is desired to illuminate is extensive. There are two such in operation in different shops—one in a boiler shed and one in a fitting shop, both belonging to the same firm of engineers. The electricity required for the production of the light is generated by a powerful rotary drum lined with insulated wires, which is driven speedily round its axis by a four horse-power engine, and against this drum gently impinge fixed brushes of brass with but little friction. The mechanical force thus employed creates the electricity, which is conveyed to coils of insulated wire, and these are in course conveyed from where the generator is stationed to such position as the electric lamp may be desired to stand; in this case a distance of about 120 feet. These wires are then connected to the carbon tapers or pencils, which are about 18 inches long and half an inch thick, and are so fixed (one from the top and one from the bottom) on a delicate and most ingeniously constructed self-adjusting instrument, called the lamp, by which the relative distance of the carbon points, when once adjusted by the operator, is maintained, checked and regulated by the same currents of electricity which produce the light. One pair of carbons lasts about four hours and requires to be replaced by a new set; but as the top carbon is consumed much the quicker of the two, lasting only about one-third of the time that the lower one lasts, the interruptions of the light are much more frequent and irregular than once in four hours.

The light from each of the two electric lamps that I speak of is intense in its brilliancy, and has, when looked at, a very decidedly dazzling effect on the eyes, somewhat akin to that experienced when one looks at the sun with the naked eye. The lighting portion of the arrangement is elevated a considerable distance from the ground level, in order to diffuse the light as much as possible and to obviate the discomfort occasioned by its effect on the eyes, and the light creates a beautiful white clear light, brighter in quality, but somewhat like in color to the light reflected from the moon at its full on a very clear night, and it gives the coal gas flames which are seen in its neighborhood a dull yellow, candle-like appearance, which contrasts unfavorably with its clearer rival. Where the light from the electric lamp is obstructed by workshop materials or tools, a dense, dark shadow is cast behind these, and it is here that the coal gas proves its almost infinite divisibility and is used to disperse the darkness occasioned by the brighter light, which cannot thus be subdivided. These shadows might or may possibly through time be partly lightened by the use of reflectors, arranged in suitable positions to throw back the light, instead of having recourse to gas jets; but it seems to me that this is in some cases almost impracticable from the fact that the reflectors would require to be continuously moved or in motion to obtain the desired effect, and where economy in the lighting arrangement is the desideratum, this would add much to the cost of the electric light. The effect of the new light, as used in the boiler shed, seemed to me to be more agreeable and less

pernicious to the eyesight than in the fitting shop, for in the latter, where the fittings and tools are principally formed from polished metals, the reflection is more severe than in the former, where the dull iron is generally used, and from the reflection from which comparatively little discomfort is experienced.

The fact of the carbon points being so quickly consumed, and requiring so much—almost constant attention, and the variability of the distance of the carbon points from each other, caused by the more or less rapid and eccentric consumption of the carbon particles—a defect which even the beautiful adjusting mechanism cannot altogether obviate instantaneously—are drawbacks against the use of this beautiful light; for as soon as the distance of the points is varied, so soon is the intensity of the light affected, and lessened or increased, as the case may be, thus giving to the light a dangerously fluctuating effect in general (which is far from pleasant), and in some cases totally extinguishing it, both faults of a very serious nature, when it is considered that, without the assistance of the constant and reliable coal gas supply, the danger, inconvenience and expense of such irregularities as those of this electric light are such as to lead to the destruction or damage of the materials, workmanship and tools for the guidance of which the light is intended. A supply of coal gas must also be necessary at each change—and they are frequent—of carbon points, unless the place could afford to be in total darkness while the operation is being conducted, or a second electric lamp be fixed, to work while the first is having its carbons rearranged.

The lamp, properly so-called, is in itself, as I have said, a most ingenious automatic arrangement, very delicate in its action and therefore liable, one would think, to get out of order. Certainly it takes a deal of attending to while in operation and requires almost constant watching.

It may be well for me to mention here that the two electric lights alluded to in my observations were not brought into use with a view to economize coal gas, nor have they tended toward such a result. The object aimed at was the clearer illumination of the area inclosed by the buildings, and in this respect they seem to answer admirably.

I hope on some future occasion to enter more fully into detail as to the comparative cost, utility, convenience and physical effects of light from coal gas, as compared with those of the electric light; but on the face of observations such as those I have had, it seems clear that the light given by electricity as much transcends the quality of that produced from coal as do the indefinite divisibility, cleanliness and ease in application of coal gas exceed these attributes as applied to the electric light.

**Rates of Wages for Railway Labor in France.**—Mr. Peixotto, United States Consul at Lyons, furnishes the following table showing the rates of wages paid to the employees of the principal railways in France, and remarks: I have derived my information from the most authentic sources, and therefore have no hesitation in declaring it to be reliable. On comparing these rates with those paid for like or similar labor in the United States, it will be seen that our employees and workmen are paid very much higher wages, and though the cost of living is greater in the United States, this difference is more than made up in the superior comforts which the American workmen possess. On the whole, there appears to be no valid reason why our railway employees of every rank and condition should not, on comparing and contrasting their pay and condition with those of their brethren in France, be every way contented and satisfied:

RATES OF WAGES OF EMPLOYEES OF THE PRINCIPAL RAILWAY COMPANIES IN FRANCE, JUNE, 1878.		
Engine drivers (engineers on locomotives) on passenger & freight trains, 4 classes	\$405.40 @	\$579.15
Stokers (firemen), those who fire the engine with coal, 3 classes	289.58 @	347.49
Conductors (chiefs of the trains), 3 classes	308.88 @	347.49
Chief conductors (stations in principal towns)	250.97 @	351.35
Deputy chiefs (in principal towns)	289.58 @	354.98
Watchmen	211.66 @	315.53
Chiefs of baggage	289.58 @	463.12
Baggage men	231.66 @	308.88
Chiefs of the gangs (workmen)	231.66 @	463.32
Chiefs of the porters	260.62 @	463.32
Porters and servants	193.05 @	308.88
Overseers of workmen	250.97 @	350.58
Chiefs of freight and engine drivers, 4 classes	888.03 @	1,158.30
Clerks	386.10 @	772.20
Auxiliary clerks	231.66 @	347.49
Employees	231.66 @	317.66
Telegraphy stationnaires	213.74 @	318.53
Tyler	212.35 @	250.07
Lampists	231.66 @	356.10
Switchmen	231.66 @	308.88
Controllers	289.58 @	579.15
Ticket agents (men and women)	260.62 @	637.06
Greasers	193.05 @	250.97
Workmen	173.74 @	243.24

Solicitor Raynor, of the Treasury Department, has made a report in the case of the wrecked steamer *Metropolis* entirely exonerating the owners. He has thoroughly sifted the testimony and concluded that the vessel was stanch and strong when she left this city, and that the loss of life is to be attributed to the incompetency of the life-saving crew. This decision will surprise many people, including some of those who were on board of the steamer when she was wrecked. It is possibly true, but it is very hard to reconcile it with most of the facts in the case. The conclusions drawn from a given set of facts do not strike us as following the ordinary rules of antecedent and consequent.

An English newspaper, noting the fact that Pennsylvania Anthracite coal has been introduced in Italy, selling for \$7.72 per ton and yielding equally good results to iron founders who use it as English coke, which costs them \$11.58 per ton, declares that the Anthracite coal will probably supersede the use of coke. Over 200,000 tons of English coke are now annually sent to Mediterranean ports. The English journal adds: "Perhaps at some future day the Americans will be good enough to try the experiment of supplying the British householder with coal fit for domestic consumption at a reasonable cost. Our own coal merchants have hard y succeeded in their enterprise."

#### ANSONIA CORRUGATED STOVE PLATFORM

Manufactured by

**Ansonia Brass & Copper Co.**  
Office, 19 & 21 Cliff Street,  
NEW YORK.

The Ansonia Corrugated Stove Platform, with its heavy figured ogee border, is believed to be the best Platform offered to the trade. As shown in the illustrated section herewith it requires no nailing to keep it in place or to prevent it from turning up at the edge; while the metal is of sufficient thickness to require no lining.

The low price, superior quality and fine finish of this Platform will be readily acknowledged. Packed 24 in a case. **Send for price list.**

#### ANSONIA Bronzed Fire Screen, With Ornamented Moldings.

PATENT APPLIED FOR.

**The Portable Bronzed Fire Screen or Shield**, as shown in the illustration, is especially designed for the safety and protection of walls, furniture, woodwork, paper or varnish from heat. Being constructed of metal, with firm and substantial edges, can be found to stand alone, it may be easily adapted to any position above a stove or before a gas or fire place. The demand for something useful, durable and ornamental as a Fire Screen has long been felt, and having finally accomplished the desired result, we are prepared to fill all orders promptly.



#### CHAINS

UNION CHAIN WORKS,  
REITER & MORTON,  
Pittsburgh, Pa.,

Manufacture all kinds of

#### Coil, Cable, Crane, Railroad, Wagon and Agricultural Chains,

From Best Standard Brands of Iron.

Our Chains are all thoroughly tested and warranted, and will be found equal to the best of either home or foreign make.

Prices the very Lowest.

#### PHILIP S. BIGLIN.

Successor to W. F. SHATTUCK & CO.,  
Manufacturers' Agent for

#### AMERICAN HARDWARE,

100 Chambers St., New York.

Maltby's Britannia and Coco Dippers.

Eddy's Refined Lamp Black.

Engle's Axe Pick and other Handles.

"Brass, Zinc, Tin, Lead and Emery Papers.

Cortland Forged Horse Nails.

Tackle Blocks, Spokes, &amp;c., &amp;c.

DARLING, BROWN & SHARPE  
Providence, Rhode Island,  
MANUFACTURERS OF  
United States Standard Rules,  
AMES' UNIVERSAL SQUARES,  
Patent Hardened Cast Steel Try Squares,  
THE AMERICAN STANDARD WIRE GAUGE,  
Bevel Protectors, Hardened T Squares and Bevels, Center Gauges,  
Steel, German Silver & Boxwood Triangular Scales, Vernier  
Calipers, Caliper Squares and Rules, Plumb Bobs,  
Paper Drawing Scales, Willis' Odontographs, Steel Straight Edges,  
and T Square Blades.

MEDALS AWARDED: Paris Exposition, 1867; Vienna Exposition, 1873; Philadelphia, 1876.  
Illustrated Catalogue sent per mail on application.

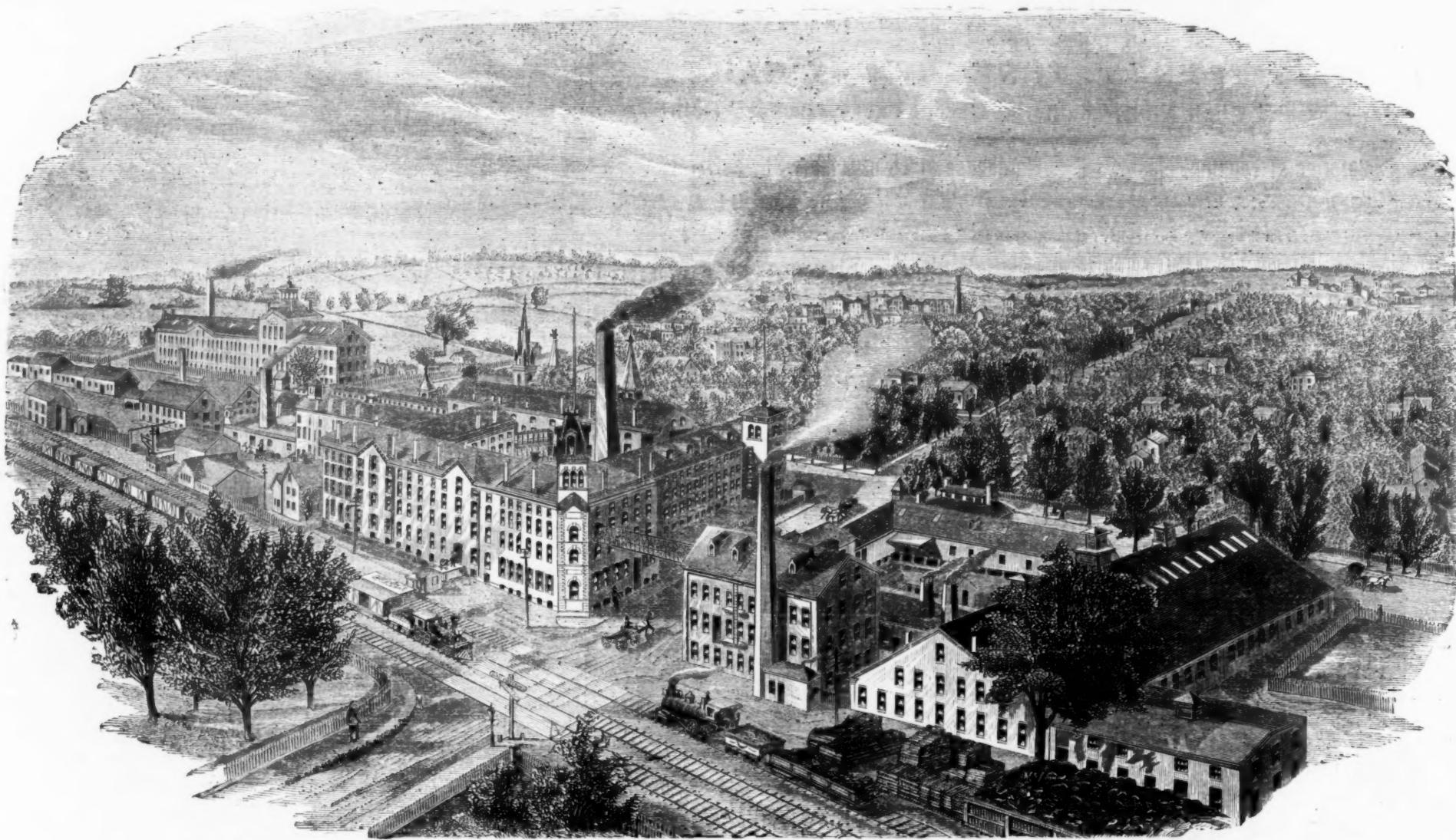
# RUSSELL & ERWIN MANUFACTURING COMPANY

## Manufacturers of HARDWARE.

FACTORIES, - - - - NEW BRITAIN, CONNECTICUT, U. S. A.

MANUFACTURERS' AGENTS AND DEALERS IN GENERAL HARDWARE AT OUR

WAREHOUSES: NEW YORK, 45 & 47 Chambers Street; PHILADELPHIA, 425 Market Street; BALTIMORE, MD., WM. H. COLE. Agent, 17 South Charles Street.



### WORKS OF

THE RUSSELL & ERWIN MANUFACTURING COMPANY,  
NEW BRITAIN, CONNECTICUT, U. S. A.

## IRON AND BRASS WOOD SCREWS.

Our Screws are always for sale at **LOWEST** prices  
made by responsible manufacturers.  
We do not guarantee prices.

**ASSORTMENT COMPLETE, ORDERS FILLED PROMPTLY.**

**Cutlery.****FRIEDMANN & LAUTERJUNG,**

Manufacturers of PEN AND POCKET CUTLERY.

Solid Steel Scissors, Shears, Razors,  
Russia Leather Straps, Hones, &c.**McCoy & Co.,**

SUCCESSIONS TO

Van Wart &amp; McCoy,

**Cutlery.****JOSEPH S. FISHER,**No. 411 Commerce St., PHILADELPHIA  
AGENT FORGeorge Wostenholm & Son,  
"Limited."

Washington Works, SHEFFIELD,

Celebrated I-XL Cutlery, Razors, &amp;c

AGENT FOR

WALTER SPENCER &amp; CO.,

Steel and File Manufacturers,

Rotherham, ENGLAND.

CORPORATE MARK.

NO SPENCER  
ROTHERHAM

Granted 1777.

**ELECTRIC RAZORS,**  
And the "ELECTRIC SHEARS." Nickel Plated  
Agents for the BENGALL RAZORS.  
**AMERICAN TABLE CUTLERY, BUTCHER KNIVES, &c.**  
91 Chambers and 73 Beale Sts., N. Y.  
423 N. Fifth St., ST. LOUIS, MO.

**MERIDEN CUTLERY CO.**

The Oldest Manufacturers of Table Cutlery in America.

THE "PATENT IVORY" HANDLE TABLE KNIFE.

EXCLUSIVE MAKERS OF THE

**CELLULOID**

HANDLE FOR TABLE CUTLERY. A most beautiful and perfect substitute for Ivory. Also makers of all kinds of TABLE, BUTCHER AND HUNTING KNIVES.

Illustrated catalogues with prices sent to the trade on application. 49 Chambers St., New York.

**LAMSON & GOODNOW**  
88 CHAMBERS ST.  
GARDNER'S PATENT  
AMERICAN TABLE CUTLERY & C.

**NAUGATUCK CUTLERY CO.,**  
Manufacturers of FINE PEN & POCKET CUTLERY.  
CULLER BROS., Sole Agents. 89 Chambers and 71 Beale Sts., N. Y.

**STANLEY RULE AND LEVEL CO.**  
MANUFACTURERS OF  
Improved  
Carpenters'  
Tools.

**HALL, ELTON & CO.,**  
Electro Plated Ware, German Silver and Britannia Spoons.



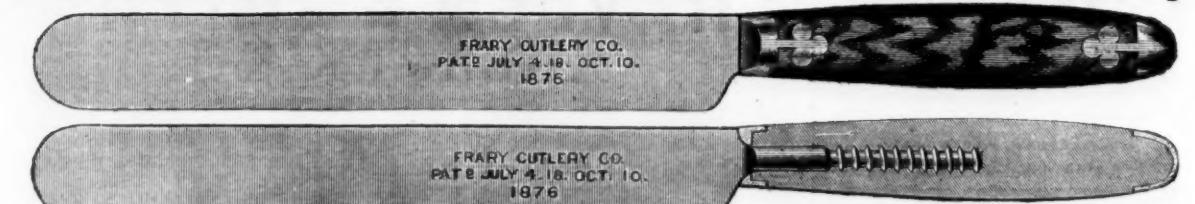
Factories, Wallingford, Conn.

Salesroom, 75 Chambers Street, New York.

**THE FRARY CUTLERY COMPANY,**

FACTORY, BRIDGEPORT, CONN.

NEW YORK OFFICE &amp; WAREHOUSE, with WIEBUSCH &amp; HILGER HARDWARE CO., 84 Chambers St.

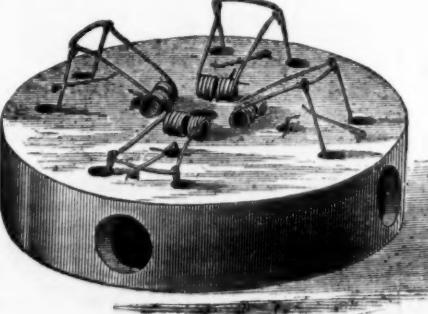
**Manufacturers of all kinds of Table Cutlery.**

The above illustrations represent their New Patent Screw Tang Fast Solid Handle Knife.

There is no question but that a solid handle knife is much more preferable than a scale tang. The great objection to their use hitherto is, that no solid wood handle has been placed on the market with the handle properly secured—no handle put on with cement will stand the wear and tear of every day usage. The cement will expand and contract with the action of heat and cold, and become loose, crack and come off, causing great prejudice against their use. This objection is overcome in our patent screw tang. A wood screw is welded to the tang of the knife or fork, and screwed firmly and securely in the handle and locked there by the boiler, making a very strong neat and handsome knife, which we warrant never to get loose, crack or come off. We manufacture a large variety of patterns, both Table, Butchers and Carvers, and furnish the patent handle nearly as low as the scale tang. We are prepared to furnish this line of goods, together with the scale tang and iron handle, very promptly, and very respectfully invite the attention of the trade.

**CLOTHES WRINGER!**T. J. ALEXANDER, Manager,  
BOSTON, MASS.

Sole Agents.

**"Common Sense"****MOUSE TRAPS,**

For Home and Export Trade.

**BEST IN MARKET.****RIPLEY MFG. CO.**

Unionville, Ct., U. S. A.,

Manufacturers of

House Furnishing Hardware.

**Cutlery.****JOSEPH S. FISHER,**No. 411 Commerce St., PHILADELPHIA  
AGENT FORGeorge Wostenholm & Son,  
"Limited."

Washington Works, SHEFFIELD,

Celebrated I-XL Cutlery, Razors, &amp;c

AGENT FOR

WALTER SPENCER &amp; CO.,

Steel and File Manufacturers,

Rotherham, ENGLAND.

CORPORATE MARK.

NO SPENCER  
ROTHERHAM

Granted 1777.

**Some Facts about Ocean Steam Navigation.**

The Boston Journal of Commerce has collected some very valuable facts and figures in regard to the early history of ocean steam navigation.

Ocean steamship service has been wonderfully extended within a few years, but it seems scarcely credible that many of our old-school merchants can remember its inception and early days. Yet the fact is that ocean steam navigation commenced on the 26th of May, 1819, with the departure of the steamship Savannah, Capt. Moses Rogers, from Savannah, Ga., for Liverpool, Eng. She was succeeded by the Commerce, from Hamburg for Charleston, S. C., January 27th, and the Maid of Orleans, also from Hamburg for Charleston, May 3, 1823; the Teeka, from Rio Janeiro for Calcutta, May 5, 1827; the Curacao, from Antwerp for Curacao, August 12, 1828; the Royal William, from Pictou, April 1, 1833; the Sirius, from Cork, April 4, the Great Western, from Bristol, April 5, and the Liverpool, from Cork, Nov. 6, 1835; the British Queen, from Portsmouth, July 15, 1839; the Argyle, from Liverpool for New Orleans via Cadiz and Madeira, April 6, 1840; the Unicorn, from Liverpool, May 16, the Chili, from Falmouth, and the Peru, from London for Valparaiso and Callao via Rio Janeiro, July 2, and the Britannia, the pioneer of the Cunard line, from Liverpool, July 4, 1840. One hundred and sixty steamships now ply the Atlantic between Europe and America, and new ones are being added from time to time to meet the increasing demand for the quick transportation of both passengers and freight. Quite a number of additional steamers have this year been put on the regular transatlantic lines at Boston, numerous other steamers are such frequent visitors here as to appear almost permanent, and the immediate future is full of promise in this direction. Cheap ocean steam service has monopolized much of our carrying trade to European ports, and the sailing service to competing points has suffered in consequence.

Captain Irone, of Her Majesty's ship Belcher, made the Anglo-American Telegraph Company's steamer Minia haul down its flag the other day. The flag is a Union Jack with a streak of lightning in it, to represent an electric flash. The Union Jack is the exclusive property of Her Majesty, and no merchant vessel has a right to carry it. Whether a streak of lightning through it alters its character and forms a legitimate private flag is one of the questions now raised. The Anglo-American Telegraph Company evidently think that the streak of lightning makes a great difference, for their vessels have for years carried this flag at home and abroad without any objection being raised.

A Victoria dispatch says that the following resolution has been passed by Parliament unanimously: "Resolved, That Chinese shall not be employed upon the public works of the province, and that a clause shall be inserted in the specifications of all contracts awarded by the government to the effect that contractors will not be permitted to employ Chinese labor upon the work, and that in the event of their doing so the government will not be responsible for payment of the contract."

Eighty-two railroad men connected with the freight department of the roads leading from Boston and New York in the East, Cincinnati, Detroit, Cleveland, St. Louis, Chicago, Toledo, St. Paul, and other points in the West, were in convention for two days at Niagara Falls last week. The business was the adjustment of monthly accounts and perfecting the arrangements for carrying into operation the programme agreed upon at the Saratoga conference.

The walls of Morsala, Sicily, have been placarded with an announcement that the 35,000 inhabitants, in view of their inability any longer to bear the burden of taxation placed upon them, wish to sell their city. They hope, the placard says, "to find buyers who can satisfy the cupidity of the vultures who lay waste the fair regions of Sicily, and that by emigrating en masse to Australia they may escape forever the talons of the harpies."

The coal miners in different sections of Western Pennsylvania are now holding meetings to consider what shall be done with reference to the prices offered for digging. The usual price offered is one and three-fourths cents per bushel, and the convention held in Pittsburgh last week recommended that the men stand out for two and a half cents.

Owing to the great demand for the 4 per cent. bonds of 1877, the Secretary of the Treasury has directed the paper mill at Chester, Pa., which makes the distinctive fiberized paper on which the bonds and notes are printed, to resume operations, which have been suspended for some weeks.

An ice company of Philadelphia shipped from its house last week in Gardiner, Maine, with one crew over 2400 tons of ice, the largest shipment in that length of time ever before made in that section. About 100,000 tons of ice still remain in the Kennebec to be sold.

The preparatory labors of the delegates from American chambers of commerce and the French commission, in furtherance of a treaty of commerce between the United States and France, have commenced.

Gov. Cullom, of Illinois, has been appealed to for a company of militia to protect the coal mines at Stanton, Mancoupin county, which are threatened with destruction by striking miners.

In the Provincial Parliament of Victoria, B. C., on the 3d inst., a bill was introduced to impose a tax of \$60 per annum on every Chinese person in the province.

Charles E. Legge, a civil engineer, has seized the plant belonging to the Montreal, Portland and Boston Railway for debt due him.

**S. H. & E. Y. MOORE,**  
68 Lake Street, CHICAGO, ILL.,  
**Heavy Hardware & Railway Supplies.**

AGENTS FOR  
Providence Tool Co., Reading Bolt & Nut Works, Syracuse Bolt Co.,  
And Other Manufacturers.

MANUFACTURERS OF  
**CLIMAX BARN DOOR HANGERS,**  
MOORE'S  
Anti-Friction Sliding Door Sheaves,  
"Folant" Barn Door Catches,  
&c., &c.



The "Climax" is recognized as the **Landing Hanger** in the market. It is **altogether superior** to any other Barn Door Hanger ever made. In the "Climax" is a **complete wheel** provided with Anti-Friction Bearings. It is practical, hence its widespread popularity. It is the **only Anti-Friction Hanger having a Wheel**. The trade are cautioned against imitations, made to sell, and which are without any mechanical principles to recommend them.

**Moore's Anti-Friction Hay Fork Pulley.**

The main wheel contains four anti-friction wheels which revolve upon axles fast in its sides. The main wheel revolves nine times while the anti-friction wheels are revolving once.

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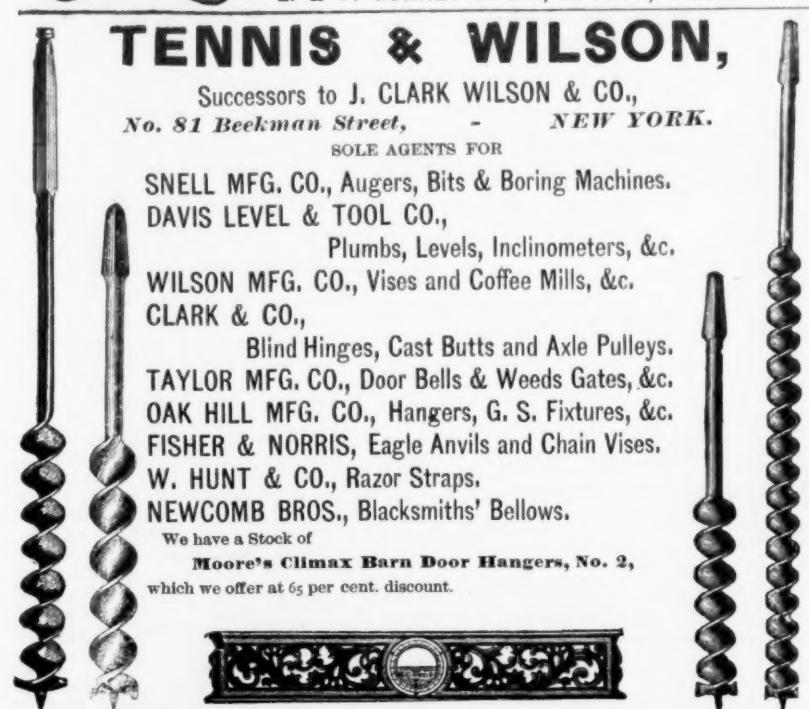
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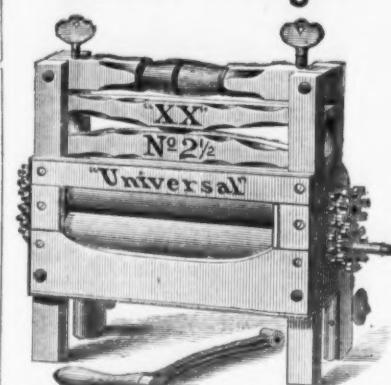
Superior for LIQUID PAINT on account of its body and wearing properties.

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**Carriage & Wagon AXLES,**  
WINSTED, CONN.  
ESTABLISHED 1839.



Patented in the United States and Canada.  
The attention of Manufacturers and of the Carriage Hardware Trade is respectfully invited to the Eureka Platform Spring Wagon Trestle.

This Gearing is far ahead of all others in strength and light appearance. It is the strongest and most perfect gear in use, and is meeting with a large sale. Manufacturers of Platform Wagons will use no other after a trial of this.

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Punching Presses, Hand Drilling Machines, Ratchet Drills, Combination Lathe Chucks, Cutters for Teeth of Gear Wheels, Screw Plates, Hand, Machine, Nut and Pipe Taps, Bolt Cutters, &c., &c.

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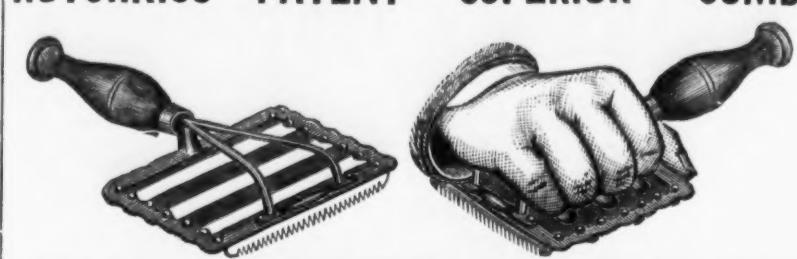
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Delivered on cars at Worcester.

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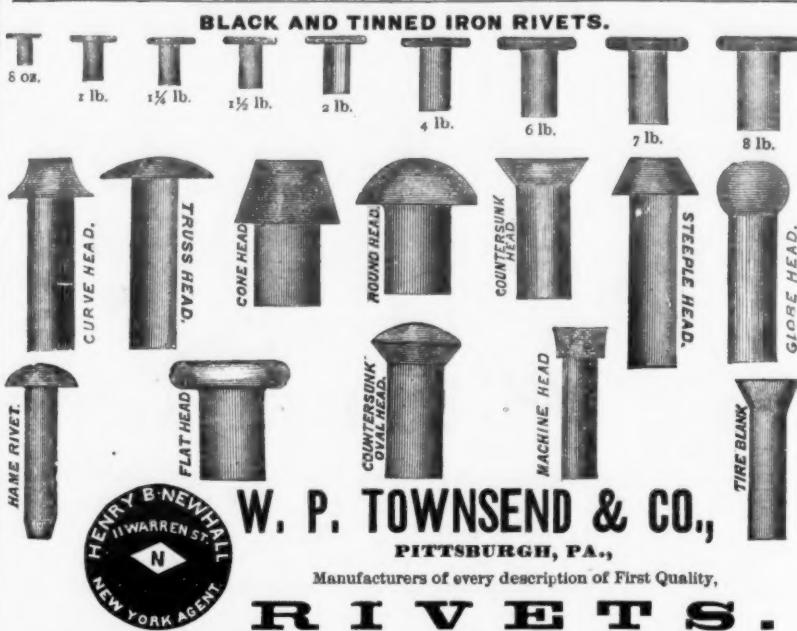


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NORWAY IRON FANCY HEAD BOLTS,  
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# The Iron Age.

AND  
Metallurgical Review.

New York, Thursday, August 8, 1878.

DAVID WILLIAMS . . . . . Publisher and Proprietor,  
JAMES C. EAYLES . . . . . Editor,  
JOHN S. KING . . . . . Business Manager.

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our agents for Australia. Sample copies will be mailed  
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trades we represent in Australia, Tasmania and New  
Zealand.

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Twenty-second Page.—Hardware. (Concluded). Iron, Metals, Old Metals, Paper Stock, &c.

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Twenty-fourth Page.—Boston. (Concluded). Cincinnati, Louisville, Richmond, Baltimore, Foreign. Our English Letter.

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Thirty-first Page.—New York Wholesale Prices. (Concluded).

Thirty-first Page.—Philadelphia, Buffalo, Chicago, and Pittsburgh Hardware and Metal Prices.

Thirty-seventh Page.—Boston and St. Louis Hardware and Metal Prices.

The views of a Brazilian merchant on packing goods for foreign markets, which we print on another page, will be found of interest and value. The writer recognizes the taste and neatness displayed in packing goods in this country, but thinks we have yet to learn how to put up merchandise so

that it shall reach foreign markets in good condition. Suggestions of this kind are very useful to all classes of exporters.

## The Congressional Inquiry into the Condition of Labor.

The work of Mr. Hewitt's committee, appointed to inquire into the causes of the present depressed condition of the labor market, has not been without good results in showing all who read the reports of its sessions how utterly groundless are the fears now entertained that the Socialists of this country have power for mischief. They are at best a disorganized company of impracticals, mostly ignorant men who have notions of their own about everything in heaven above and in the earth beneath. No two of them think alike on any two subjects, and, as usual with such people, none are willing to concede anything to the opinions of others. In permitting these men and women to come before the committee as volunteer witnesses, Mr. Hewitt has done good thing. These terrible fellows, the Socialists and Communists, have, in the sledge of the day, "given themselves away." As the rule they have come on the stand full of confidence and eager to ventilate their notions of men and things, but a few well-directed questions have so tangled them up in absurdities that they have left the stand confused and crest-fallen. We cannot spare space in which to print any considerable part of the unimportant talk to which the committee have patiently listened, but an abstract of part of the testimony will show the average quality:

The first witness examined was Thomas Rock, who spoke on behalf of the stone masons. The burden of his complaint was that the government gave the work on public buildings in one city to contractors in other places, and added that he thought the government had no right to employ contractors. Hugh McGregor, a pupil of Justus Schwab, who didn't believe in God, hadn't seen the last census, and appeared to be in a befuddled condition generally, spoke as a "citizen." He was questioned closely by Mr. Hewitt as to his aims and desires, but did not seem to know exactly what he wanted.

Cornelius O'Sullivan, a stonemason, complained that he had been discharged from work on the Albany Post Office for speaking against the government and had been denied a hearing. Mr. Hewitt promised to lay his case before Secretary Sherman.

H. Bartholomew, a worker in Weber's piano factory and a socialist, who wanted to know everybody's business, did not appear to have suffered much from hard times, if the clothing and jewelry on his person might be taken as an indication of his circumstances. He appeared to think that the accumulation of property by manufacturers was a crime, though in his own case, as he was only a workman, it was no doubt a virtue. He said that the government ought to run the trades on the co-operative principle, and thought that machinery might be a great benefit, but at present it was a great curse.

Isaac Bennett, who belonged to the same delegation, was a cigar maker and "the representative of all the working classes," a claim that he could not substantiate, as it turned out that he only partly represented 1,400 of them. Depression in trade was, in his opinion, "because there are millions of men out of work, and they are driven out of work by machinery." He wanted to see an equal distribution of the wealth of the nation every Saturday night.

It must not be supposed, however, that Mr. Hewitt proposes to devote the summer to hearing the views of this class of witnesses. When they have had a fair chance to express their views they will be required to give place to others whose opinions the committee desire to hear. In the mean time the committee hope to acquire valuable data from those who are willing to communicate facts by mail, and for the information of those who may wish to help their work Mr. Hewitt has prepared the following circular, which we commend to the favorable consideration of our readers:

The Congressional Committee earnestly request the co-operation of the public in all sections of the country in obtaining information to aid in a practical solution of the important questions submitted to it. They especially invite suggestions from representative men in all departments of business, they propose to raise questions to employers of labor throughout the country:

1. What were the selling prices of your products in 1860 and in each subsequent year down to 1877, inclusive?

2. What were the wages paid by you in each of these years for labor employed?

3. Where the persons furnishing information are willing to do so, the committee invite them to state the percentage of profit made by them in each of these years upon the capital employed in their business.

4. What were the wholesale and retail prices of the leading articles of family consumption during each of these years in your vicinity?

5. What is the difference, if any, between the rents of tenements occupied by operatives in the years 1860 and 1878 in your vicinity?

6. What was the comparative amount of the products of your business in quantity and value in the years 1860 and 1878?

State the comparative steadiness of employment of operatives between the years 1860 and 1878, inclusive.

The committee invite suggestions from employers and employees to the extent and causes of the present depression of business, and as to any special Federal legislation which in their opinion would tend to relieve the same. The committee will hold their next session in the New York Post Office on Tuesday, Aug. 20, at 12 o'clock.

We hope this circular will call out replies from all parts of the country. The information thus gathered will be of the greatest statistical value, and will prove a material aid in Congressional legislation on matters affecting the welfare of the masses of the people.

The story of the new silver dollar, popularly known as the "buzzard dollar," in compliment to the English die-sinker who designed the eagle on its reverse side, shows very clearly that people do not always know what they want, even when they are very much in earnest about it. Thus far all the efforts of the Treasury Department to get these coins into circulation have failed. As fast as they are issued to the banks or in payment for bullion purchased, they flow back through payment of customs dues; consequently they continue to accumulate in the

regulate the use of capital, run all the railroads and telegraphs, and manage all the machinery in the interest of the people. He predicted that, unless Congress should do something for the unemployed workmen next winter, there would be a repetition of the recent railroad riots.

Osborne Ward, who represented the Socialist Labor Party of Brooklyn, explained the benefits of the co-operative system as contrasted with the competitive system. He attributed the distress among the working classes to the production of machinery, by which one-tenth only of the men are required to do the work. He believed that the poor are worse off, relatively, than they were 50 years ago; that there would be even more production under the co-operative system than under competition.

G. W. Madox spoke on behalf of the Congress of Humanity. He read a letter to the committee containing a scheme for the employment of 100,000 families by means of government aid of money, to be lent them to settle upon government lands. The money, he said, could be printed, and when returned could be destroyed. He gave, as an instance of such an operation by government, the building of a market in the Island of Guernsey, about 100 years ago.

Bruner, a tailor, spoke in favor of men's right to labor, against the capitalistic mode of production, and advocated the referendum.

Patrick Logan spoke in favor of the government sending \$500 each to as many of the 1,500,000 unemployed as need it to go West.

Robert W. Hume, on behalf of the Labor League, spoke against interest on money, the enforcement of bills of credit by legislation, the oppressive employment of women at low wages, and the reduction of the time of labor to four hours a day.

We might extend these quotations through many columns, but it is unnecessary. Most of the witnesses thus far examined seem to have about as clear ideas of the functions of government as the lady who could not see what the government wanted with taxes, and who, when told what purposes they were expended for, replied that she had always supposed such things were paid for out of the Treasury.

The people who have furnished so much entertainment for the committee and the reading public are entitled to their own opinions and have a right to express them. It is a mistake, however, to suppose that they have or can have any influence in national or State politics. No ten of them could agree for a week, and any organization they might form would soon break up into countless fragments, each following the lead of some noisy demagogue who had fallen out with his fellows. How little all the foolish talk of these people affects public opinion is seen in the surprising eagerness with which the 4 per cent. loan is taken, and in the gradual restoration of confidence. We shall always have agitators and social reformers, but it will not be long before the masses of the people will be too busy to listen to them, and too well satisfied with the prospect of returning prosperity to care as much as they are now supposed to do about an equal distribution of the wealth of the nation every Saturday night.

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Treasury vaults. So long as Mr. Sherman refrains from paying out these coins as interest on the public debt, this accumulation may be expected to continue. In any event they will flow back as fast as possible. Even in the West, where the clamor for this coin was loudest, it cannot be made to circulate. Western merchants offer to make remittances in silver dollars at a discount if Eastern creditors will receive them, as they cannot use or dispose of them at home. This shows two things: Money is sufficiently abundant for the purposes of trade, and the people do not want silver for anything but small change.

## Our Foreign Trade.

The acting Chief of the Bureau of Statistics gives us a forecast of the coming report of commerce and navigation for the fiscal year ended with June, in the shape of an abstract of totals, which, as regards the amount of our trade balance, will satisfy all reasonable expectations. The following are the comparisons for 1877 and 1878:

MERCHANDISE.	For 12 mos. ended June 30, 1878.	Exports, domestic.....	\$60,633,798	Imports.....	\$664,584,400	Excess of exp'ts over imp'ts.....	\$47,931,533
Exports, foreign.....	14,200,402						

which we should be pleased to show to any one who may be interested in the matter.

Mr. Lewis Swift, of Rochester, furnishes an interesting illustration of what a man may accomplish in the field of a science which he loves for its own sake. Mr. Swift is, we believe, a hardware merchant. From all we can learn he has but a modest complement of instruments, and none of those great and costly appliances which are placed at the command of professional astronomers in government observatories and endowed colleges; but he is rapidly gaining a place among the first astronomers of the time, and his name will be known and remembered as long as there is a literature of astronomical science. Mr. Swift has the honor of discovering two comets, and is one of the few who have been able to verify the existence of the inter-mercurial planet Vulcan from personal observation. He and Prof. Watson, making independent observations during the recent eclipse, saw Vulcan at the same moment. Such men do more for science than those who are trained in the schools and follow scientific studies as a profession, and prove the truth of the couplet familiar to the readers of Longfellow:

"For 'tis the heart and not the brain  
That to the highest doth attain."

We print in another column an interesting dispatch from Mr. Peixotto, U. S. Consul at Lyons, on the condition of the peasantry of the Rhone district of France. Mr. Peixotto believes that this district, as indeed all the agricultural provinces of France, offers a market for American agricultural machinery and implements which might be worked with advantage.

A letter from a correspondent in Bremen, elsewhere printed, criticizes somewhat sharply the views expressed by Mr. Du Bois, United States commercial agent at Aix-la-Chapelle, in a dispatch to the State Department, printed in our issue of June 13. The question at issue is rather a delicate one for newspaper discussion, and one in which differences of opinion are likely to be reconciled only by the logic of events.

#### Metallurgical Notes.

**PATERA'S PROCESS AT BARANCA, MEXICO.** Mr. Weberling gives the following account of the process used at Baranca, Sonora, to the *Mining and Scientific Press*. The ore worked is a fahl-ore, with zinc blende, galena and iron and copper pyrites. The gangue is quartz and the ore averages \$150 silver, with only a trace of gold. It was crushed dry formerly by a 10-stamp battery and now by the Brueckner ore pulverizer. It is then roasted to drive off the sulphur, antimony and arsenic, and to change the silver into a chloride, for which purpose 5% to 7% of salt is added. A Brueckner roasting cylinder is in process of erection, but the roasting is accomplished at present by three reverberating roasting furnaces, with four hearths, arranged in the form of steps. Each of these reverberatory furnaces roasts four tons in 24 hrs. The roasted and chloridized ore consists essentially of oxide of iron and quartz, chloride of copper and zinc, chloride of lead and chloride of silver, with a trace of gold, which is too small to be worked for.

This ore is transferred to the leaching tanks, which are 10 feet in diameter, 3 feet high, and hold 8 to 10 tons of ore. The tanks are then filled with cold water, for the purpose of removing the salts of copper. Some of the chloride of lead is also removed, but not all. The soluble copper and zinc are entirely extracted, and from the solution the copper is precipitated by means of iron. In some reduction works, leaching with hot water is preferred, as it more perfectly removes lead chloride, but the experience at Baranca is that the salts of lead which remain are not injurious, but rather beneficial at a further stage of the operation, as will be seen presently. After all salts soluble in cold water have been removed, the residue consists essentially of the quartz and iron oxide, chloride and sulphate of lead and chloride of silver. A cold dilute solution of hyposulphite of sodium is then poured upon the ore and left until all the silver is in solution. A small amount of chloride of lead goes into solution also. The solution is then run into a tank placed beneath the leaching tank, and a solution of polysulphide of calcium is added until no further precipitate forms. This precipitate, which is essentially sulphide of silver with a little lead, is filtered off and, after drying, roasted in a small reverberatory furnace, until the sulphur is all removed. In this way silver bullion of 650 to 700 fine is produced. This is mixed with lead and litharge and cupelled in a Mexican cupelling furnace to a bullion 998 fine. For this reason the lead which is thrown down with the silver as sulphide is rather beneficial than otherwise, as it assists in the cupelling operation. It will be seen that the addition of calcium polysulphide each time to the mother liquor slowly changes it into hyposulphite of calcium, which seems to work quite as well as the corresponding sodium salt, and as long as the solution is kept in use, constantly regenerates itself by the polysulphide of calcium added.

**FREVENTING A CHILL BY THE USE OF SUPERHEATED BLAST.**

Mr. Charles I. Rader, of Easton, Pa., in a letter addressed to the Secretary of the American Iron and Steel Association, gives the following instance where a chill was prevented by the use of superheated blast: The furnace, supplied with Siemens-Couper-Cochrane stoves, owing to the use of inferior coke was working cold and running heavy black cinder and mottled iron. While in this condition the water supply, in consequence of a sudden and extensive leak in the dam, was becoming beautifully less, and it was only a question of a few hours when it would be entirely stopped. It was estimated that repairs to the dam and the filling again of the same would require 15 days' time.

Every one predicted a thorough chill. But here the stoves came to the rescue. Filling was ordered to be stopped, but blowing was continued as long as the water lasted. This had the desired effect. The increased volume of gas consequent on "blowing down" gave increased temperature to the stoves, and increased the same from 1050° to 1050°, causing the cinder to become white and the iron No. 1 foundry. The furnace was "banked" for 16 days, and on the third day after starting up ran No. 1 foundry. Following is an observation on the stoves' capacity to retain heat when standing idle: Blast off furnace for 13½ hours; temperature of blast when taken off, 1050°. Temperature of blast on starting up, blowing through the same stove, 650°.

#### BERGSTROM'S BLAST HEATING STOVE.

An interesting model of a blast-heating stove is shown by C. J. Bergstrom, of Finnhyttan, in the Swedish section of the Paris Exhibition. The heating pipe is of cast iron, oval in section, with internal parallel gills, forming a continuous spiral. The flame of the burning gas passes up a brick tube inside the coil and passes down between it and the outer case, which is a cylindrical shell of brickwork, with a domed top, the course of the air being in the opposite direction. The casing is made of bricks set in a frame of wrought-iron bars, so that it can be divided into two halves, which, being mounted on wheels running on rails, are easily removable when necessary for cleaning, replacing broken pipes or other repairs.

#### Criticism of a Consular Report.

To the Editor of *The Iron Age*: Allow me to communicate some observations concerning the remarks made by the United States Commercial Agent at Aix-la-Chapelle, in *The Iron Age* of June 13 (page 15).

Mr. Du Bois speaks of doing away with the middlemen or importers, and advises American manufacturers to send commercial travelers over to Germany. Do not all the larger dealers in the United States transact their foreign business through their importers? Would it be profitable for a dealer in the interior of Germany to send his orders direct to the different manufacturers in the United States? The importer is a necessary individual, as he collects the orders and enables the manufacturers to fill them.

Mr. Du Bois is probably not aware of the large competition there is already. In Hamburg and Bremen there are about ten or twelve firms who handle mainly American goods. Mr. Du Bois says they are making enormous gains and charge exorbitant prices, and "reap the lion's share;" but he is sadly mistaken when he sees such large gains in the business transactions with Germany. In Berlin, Leipsic, Dresden, Mainz, and in fact in all the larger cities, are firms who are in direct correspondence with New York houses. The competitions have taken such large dimensions that the already established houses have to be on the lookout to make only a very reasonable profit, without receiving anything of "the lion's share."

Allow me to mention that I have given you my personal experience above. Having traveled for the last 20 years in the United States, I see no more signs of fishing the million here than I ever did there.

Very respectfully, E. ELBERS.  
BREMEN, July 10, 1878.

#### Scientific and Technical Notes.

In a paper read before the New York Academy of Sciences, J. C. Russell calls attention to

##### INDURATED BITUMEN

found in the eruptive rocks of New Jersey. He found that cavities of amygdaloid trap near Plainfield are filled with a brilliant jet-black carbonaceous mineral, resembling very closely the albertite of New Brunswick. Similar deposits of bitumen were described by Percival in his report on the geology of Connecticut.

In a letter to the Editors of the *American Journal of Science and Arts*, the discovery of

##### A NEW PLANET

is announced by Prof. C. H. F. Peters, of the Litchfield Observatory, Clinton N. Y. It is of the 12th or 13th magnitude.

The *Deutsche Indust. Zeitg.* gives a method for

##### SILVERING OBJECTS BY IMMERSION,

invented by Boettger. The objects to be silvered, after being thoroughly cleaned, are suspended for about 10 minutes in a bath made as follows: A fine powder of tartarate of silver is kept in suspension in distilled water, and ammonia is added until almost all of the tartarate is dissolved, and the liquid shows no odor of ammonia.

Mr. E. Fahrig, of Southampton, gives the following method for

##### BRIGHTENING SMALL IRON ARTICLES.

Clean the articles to be brightened in a hot solution of half to a gallon of common potash for a quarter of an hour; then wash in a solution of 1 to 20 sulphuric acid half an hour, and dip in a bath of nitrous acid; wash in cold water and dry in sawdust—warm sawdust is best. The articles so treated come out beautifully, and retain their brightness for long time.

A hardware manufacturer of Vienna has recently submitted to the technical committee of the Austrian army a

##### BRONZE CARBINE.

The calibre, length, system of rifling, and pattern generally of the new weapon are exactly similar to those of the Wernli carbine; the only difference between the two being in the metal of which the barrel is constructed. Compared with the steel, it is claimed for the bronze barrel that it possesses greater elasticity and toughness, with equal hardness; that it is more durable, the grooving being less rapidly deteriorated by the passage of the bullet; that it is much easier to keep clean, and that, as the metal does not rust, it is not liable to become injured by neglect; and, finally, that while costing originally no more than the steel, the bronze barrel is always worth, as old metal, 50 per cent. of its first cost. Previous to the weapon being laid before the committee

300 rounds had, according to the statement of the inventor, been fired from it; but no deterioration of the bore could be discerned. Five hundred more rounds were afterward fired from the carbine, by order of the committee, in rapid succession, the cases of some of the cartridges being purposely torn before they were used, and the barrel being cleaned after every 25 rounds. At the conclusion of this trial the carbine shot as accurately as at the beginning, and the interior of the bore was found on examination to be practically uninjured, and in as good condition as ever. The inventor of the special bronze used, which is a mixture of pure copper and tin chemically cleansed from all oxides by means of phosphorus, has taken out a patent for its employment in the manufacture of all fire-arms.

##### BERGSTROM'S BLAST HEATING STOVE.

Francis E. Meyer and Frederick Schultz, of this city, have invented a new gun which they call a

##### RIFLE BATTERY.

which is so constructed as to deliver its fire either in a right line or in horizontal, radiating lines. The barrels, ranging in number from six to twenty, are sufficiently far apart to prevent heating from continuous firing, and are fired successively, instead of simultaneously, at the rate of 20,000 shots an hour. A steel cover in front of the gunners protects them from the enemy's fire. These guns may be fired continuously in one fixed direction, or from side to side, or the battery may be made to vibrate laterally of itself, at the discharge of each gun, thus sweeping the field in front. The battery may be divided into the barrels and the breech-block or machinery by which the barrels are loaded and discharged, the whole resting on a turn-table or pivot. The barrels are placed in a cartridge receiver at right angles to and resting on the blocks. At the right of this is a crank, at the left a lever. By pressing the lever in a given direction the block is forced up to the muzzle of the gun, when an automatic loader called the "fingers" takes hold of the cartridges and withdraws them from the receiver. Another turn of the lever and the barrels are forced into the muzzles and the battery is loaded. Then the crank at the right is turned, and at every revolution a needle is thrust forward and strikes a cartridge with sufficient force to explode it. Again the lever on the left is turned, and the "fingers" advance and withdraw the spent cartridges, and the battery is again ready to be loaded.

A trial was recently made on the Minneapolis and St. Louis Railroad with a

##### SAFETY CAR RUNNER.

The runner consists of a bar of iron 4½ inches thick, suspended from the truck outside of the car, and underneath the oil boxes, and secured across the ends of the truck by the brake-beams. It is braced between the wheels, and so constructed as to completely encircle and bind the truck. The runner hangs about four inches out from the wheels on either side, and about one-half inch above the tread of the wheel. It is claimed that it will hold

the car to the track under any and all circumstances, and the following trials seem to sustain the claim. The scene of the trials was in a sharp curve (6 degrees). An outside rail, 30 ft. in length, was removed, and the car, an empty flat, was sent over the gap at the rate of 15 miles an hour. The runner did its work beautifully; the trucks dropped on the ties, but were held close to the rail, and the car stopped in a distance of 30 ft. On the second trial the car was sent over the gap at the rate of 25 miles an hour, and ran about 150 ft., the runner holding it close to the rail, as before, and in each instance the car was replaced upon the track, uninjured, in less than 30 seconds!

Prof. Edison has also constructed a new

##### CARBON RHEOSTAT

on the same principle as his telephone. The instrument consists of a hollow vulcanite cylinder screwed on a boss attached to a brass plate. Upon the boss, within the vulcanite cylinder, are placed a varying number of disks of silk saturated with sizing well filled with plumbago and dried. Upon this column of disks a plate is laid which has a conical cavity in its upper surface. A pointed screw working in a cap over the vulcanite cylinder acts upon the cavity of the plate, thus compressing the silk disks.

In order to measure the degree of compression thus effected the screw is provided with a disk having a knife-edge periphery which extends to a vertical scale. In this instrument, says the *Scientific American*, the resistance may be varied from 400 to 600 ohms.

It possesses the advantage over the ordinary rheostat of effecting a considerable saving of time.

Mr. R. Catanach Smith, of Edinburgh, has devised a new system of

##### LOADING HEAVY GUNS

with the aid of compressed air. The rammer consists of a case containing a series of tubes, sliding one within the other, after the manner of the tubes of a telescope. Air under pressure is admitted to the rearmost tube of the rammer, which is thus forced from the rammer case into the bore of the gun, carrying the other tubes with it. When this has been effected by a simple arrangement of ports, communication for the rearmost tube to the second and so on is obtained until all the tubes are extended. On the complete extension of the rammer communication is established between the rearmost tube and a series of internal telescopic tubes, which have been extended along with the others, and through which while charging the air escapes from the bore of the gun.

Through this communication the compressed air passes from the first tubes to the front end of the apparatus, and by its pressure all the tubes are collapsed until they are again inclosed in their casing and are ready to be removed. Both sponging and ramming are effected by this method and require only a few seconds.

Bjorkmann of Stockholm, Sweden, gives the following recipe for the manufacture of the new explosive,

##### VIGORITE.

Mix in a wooden or rubber vessel 5 to 20 parts of sugar or molasses, 25 to 30 parts of nitric acid, and 50 to 75 parts of sulphuric acid.

Twenty-five to 50 parts of this mixture, called nitrolime, are mixed with 15 to 35 parts of nitrate of potash and 15 to 35 parts of cellulose.

The *Berichte d. Deutsch. Chem. Gesellschaft* contains an account of a

##### NEW INDICATOR IN ALKALIMETRY

proposed by W. Von Miller. Tropeoline, a commercial color made in England, in an aqueous solution changes from a yellow to a crimson red upon the addition of all the mineral acids, and even with certain organic acids. As tropeoline is not affected either by acid carbonates or free carbonic acid, alkaline carbonates can be titrated without the acid of heat. It is not affected by metallic salts, and therefore possesses important points of advantage when compared with litmus.

##### Packing Goods for Foreign Markets.

A Brazilian correspondent of the New York *Evening Post* sends the following letter from Rio de Janeiro:

Not long ago I was present at the opening of two boxes of apple jelly which had been shipped to this city from Baltimore, and as I saw in this one simple incident a very cogent reason why Americans have not made greater headway in their foreign trade, I propose to make it the text for this letter. The two boxes in question contained one dozen glass jars of apple jelly each, and had the appearance of having been put up with the special purpose of attracting purchasers and prejudicing them in favor of this particular brand. The jars were of a tasty pattern, with ornamental tops, and were suitable for use on the table without any further preparation than cleaning their exteriors; in fact so much stress seemed to have been placed upon their seductive appearance that they were not only securely packed in sawdust to protect them from abrasion and breakage, but their tops were carefully wrapped in paper and packed by themselves. Unfortunately this praiseworthy care seems to have stopped short just here. Over the tops of the jars two or three thicknesses of brown paper were drawn which were secured to the sides with twine, and in this condition the goods were sent out to seek a foreign market over an ocean path of not less than 5000 miles. Of course the boxes were duly marked "This side up with care"—an inscription which is as intelligible to the Brazilian porter as though it were so much Choctaw. After a detention of a month or two in the custom house and storage in a commission house for a month or two more, these two boxes were finally sold. On opening them it was found that some of the jelly had escaped through its paper covering, which was thoroughly saturated, and the rest was rancid and infested with vermin to a depth of fully 1½ inch in each jar. Below this the jelly was uninjured and still retained its flavor, but there was a uniform loss on each jar of fully one-fourth of its contents—not taking into account the natural impulse of many buyers to throw away the entire lot at first sight of its disgusting condition.

These trifling incidents, unimportant in themselves though they may be, and not applicable to every shipper of American productions to foreign markets, are yet so universal and so suggestive of the many little things which we have either overlooked or underestimated, that more practical benefit and useful information can be obtained from their study than from all the columns of statistics and all the complex and comprehensive schemes for the exhibition and introduction of American wares into foreign countries that have yet been published. It is not the opportunity for advertising ourselves, nor for placing our goods on exhibition with the patriotic inscription "American" attached to them, that we stand in greatest need of, it is simply an accurate knowledge of details—the "what is wanted," the "how to make it," and the "how to place it on the market." When we have succeeded in making the best, the most suitable and the cheapest article in a certain line of trade, and have conformed ourselves to those natural laws of exchange upon which all healthy commerce must be based, we shall probably not be a little surprised to find the market quite at our command.

That there was one grave defect in the transaction named is plainly evident—a defect that is common in the greater part of the shipments of merchandise to this country, and which is one of the causes that are operating against the growth of our foreign trade. However excellent the quality, low the price and prompt the delivery of our goods, they can all be completely counterbalanced by this practice of ignorant or careless packing; it fully justifies the oft-repeated charge, "You Americans, as a nation, are yet ignorant of the simplest rudiments of conducting a foreign trade!" It may be safely asserted that no purchaser of these paper-covered jars of apple jelly will venture upon a second purchase of that particular brand, and it is quite as certain that every purchaser of it, not an American, will hereafter shun all American goods of that class on the supposition that this method of packing is common to them all. There can be no excuse for packing such goods in this manner even for a home market, as there can never be any certainty that a package will be carefully handled, that it will always be placed with the right side up, and that it will be consumed quickly. When, therefore, the goods are destined for a foreign market, with weeks of ocean travel before them, where the heating and sweating of the cargo, together with the ever-changing position of the vessel, are sure to test the packing to the fullest extent, and with weeks, often months, of storage in foreign custom houses and warehouses where our customary shipping directions and cautions are of no avail, and the boxes are pitched about with slight regard to either top and bottom or contents, this loose system of packing becomes not only totally inexcusable but decidedly culpable. The vessel on which I came to Brazil brought a large consignment of lard, which was packed in the ordinary tin lard pails with loose tin covers. During the voyage the lard melted and ran out beneath the covers whenever the vessel heeled over, and by the time we arrived at this port there was not only a considerable loss in the lard, but also great injury had been done to other parts of the cargo, for which damages were claimed from the shippers. Even in the case of certain classes of hardware where we

might expect the minimum of damage in the boxes often affords so slight a protection that the goods are rendered quite unsaleable by rust before they can be despatched through the custom house and unpacked.

Columns of instances might be given to prove that this defect is common in nearly all branches of our trade with this country, and that it is the cause of no small part of the existing prejudice against us. Enough has been said, however, to indicate where the difficulty lies, and as it is one of our own creation, it can easily be removed.

In general terms, all goods destined for a foreign market should be strongly and securely packed. The greatest care should be given even

# AMERICAN SCREW CO.,

Providence, R. I.,

**MANUFACTURERS OF MORE THAN 4000 VARIETIES OF PRODUCT,  
AND INCREASING THE ASSORTMENT DAILY.**

Machinery employed contains important inventions recently patented, and which are designed to produce Screws at a lower cost to the consumer than has ever been attained.

All goods are distributed through the Hardware trade, to whom a liberal discount will be allowed.

**INTERNATIONAL EXHIBITION.  
PHILADELPHIA, 1876.**

(No. 235.)

The United States Centennial Commission has examined the report of the Judges, and accepted the following reasons, and decreed an award in conformity therewith.

**REPORT ON AWARDS.**

Product: Iron, Brass and Steel Screws, Tire and Stove Bolts, Rivets.

Name and address of Exhibitor: American Screw Company, Providence, R. I.

The undersigned having examined the product herein described, respectfully recommends the same to the United States Centennial Commission for Award, for the following reasons, viz: Being of a quality nearly approaching perfection, showing the highest attainment in this branch of manufacture.

G. L. REED, Signature of the Judge.

PHILADELPHIA, November 8, 1876.

Approval of Group Judges.

Daniel Steinmetz,  
Jas. Bain,  
Chas. Staples,

G. L. Reed,  
J. D. Imboden,  
Dav. McHardy.

A true copy of the record. FRANCIS A. WALKER, Chief of the Bureau of Awards.  
Given by authority of the United States Centennial Commission.

A. T. GOSHORN, Director-General.

[L.S.] J. L. CAMPBELL, Secretary.

J. R. HAWLEY, President.



After forty years' experience we offer to the trade our Centennial Screws, patented May 30, 1876, as the best we have ever known.

The method of manufacturing is also patented, and we are changing our machinery as fast as possible, to manufacture the improved article only. To introduce them, they will be sold at the same price as the old style screw.

The new screws will be packed in manila colored boxes with the new label covering end of box, and enlarged figures showing plainly contents.

To distinguish this screw we have adopted a trade-mark, which is also secured to us.

The accompanying engravings show the progress of making screw from the old blunt point to style now adopted.

Experience has shown that the weak point of screws, as formerly made, is at the heel of the thread, where all

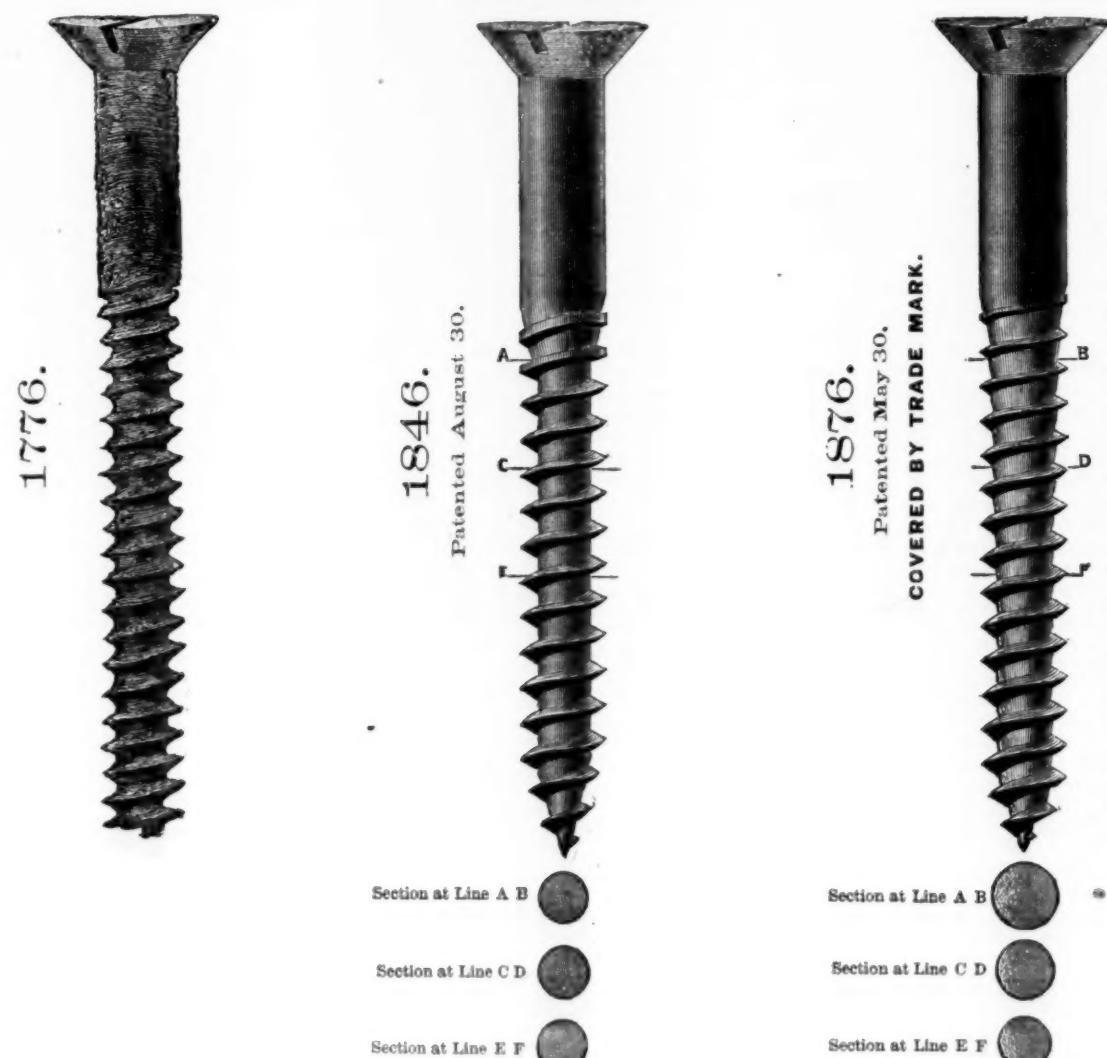
the strains of forcing the screw into the wood naturally concentrate.

To avoid the sharp angle existing in the old style of screws has been the aim of all manufacturers, but every expedient hitherto adopted has proved as objectionable as the evil complained of.

It will be seen in our new screw that not only is the sharp angle avoided, but the strength very much increased, as illustrated. See sections at lines.

**CLAIM.**

"A Pointed Wood Screw having the outer periphery of the thread upon its body cylindrical, while a portion of the body below the thread and near the neck is conical, the remainder of the body to the point being cylindrical, and yet having all the thread brought to an edge of a constant angle, without jogs in the paths between the threads, substantially as described."



On the opposite page will be found illustrations of the various Works of the company.

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**SPECIAL ANNOUNCEMENT TO THE HARDWARE TRADE.**

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**THE  
AMERICAN SCREW CO.****WILL MAKE A****PEREMPTORY SALE****OF****HALF A MILLION GROSS****Of their Best Quality****Patent Gimlet Pointed Flat Head Iron Wood Screws,****THROUGH****Messrs. BISSELL & WELLES, Auctioneers,****AT THEIR SALESROOM,****83 Chambers and 65 Reade Streets, - NEW YORK,****On Wednesday, August 21, at 10 o'clock a. m.**

---

The goods will be offered in lots to suit all classes of buyers, but assortments sold will be required to be in the usual proportion of sizes, unless otherwise agreed.

Parties unable to attend can make up their orders and forward to the auctioneers or their own correspondents to purchase for them.

All goods will be delivered F. O. B. at Providence, and through Bills of Lading obtained when desired. Terms, cash in 30 days from date of sale for approved credit.

To parties who take less than a full case of a size, an extra charge of  $2\frac{1}{2}$  per cent. will be made on the amount repacked.

## INDUSTRIAL ITEMS.

## MAINE.

The Rolling Mills Company, Cape Elizabeth, have added machinery to their works for manufacturing railroad spikes. They have filled several orders since early spring for rails for the Boston and Maine and Maine Central railroads.

The Dunn Edge Tool Company, West Waterville, have manufactured this season 15,000 dozen scythes, all of which are sold. This is the largest season's work since the works have been in operation, 39 years.

A party of Russian officers recently visited the Evans rifle shops at Mechanics Falls. One of the party asked to go to the store-room of completed parts. Selecting at random the several parts he sent for a workman. Mr. Evans sent a man from his force, who, in the presence of the officers, got up the gun and was firing cartridges within 17 minutes.

## NEW HAMPSHIRE.

The Nashua Lock Company's works have started up after having been idle a few weeks.

## VERMONT.

The Steam Stone Cutter Company, of Rutland, have furnished eight of their machines to F. S. Gross of Lee, Mass., who has the contract for furnishing the marble for the city buildings of Philadelphia. They have recently shipped one of their machines to the Middlesex quarry in Connecticut.

## MASSACHUSETTS.

The J. C. Hoadley Engine Co., at Lawrence, had an auction sale of all their effects a few days ago.

A recent trial of the Lowell battery gun, invented by D. W. C. Farrington of Lowell, and manufactured by the Ames Company, Chicopee, showed up its merits in decidedly good style, the gun being discharged 60 times in less than 10 seconds and hitting accurately a bull's-eye at 600 yards' distance. The company are manufacturing a large number of these guns, and it is thought that they will soon secure a rapid and steady sale for them.—*Vox Populi*.

The Wason Manufacturing Company have not had so many orders for passenger cars on hand since they moved to Brightwood as they have this summer, and only in the winter of 1875 when at work on their centennial cars have they been so busy.

The Waltham Watch Factory has resumed operations.

The extensive brass-works manufactory of the late firm of Hayden, Gere & Co., at Haydenville, has been purchased by Gillis, Morison & Co., of Boston, who will continue the business of their predecessors in the manufacture of all kinds of brass-work for plumbers, steam and gas fitters' supplies, steam engine and boiler builders' materials, and general brass foundry and finishing work.

After the destruction of the old works by the Mill River flood of 1873, it was determined to construct new and larger buildings, adequate to the constantly increasing demands of the business. The new buildings, constructed of brick, stone faced, are 600 x 50 feet, four stories high, with a capacity for 600 workmen, and constructed at a cost of \$300,000, are the largest of their kind in the world, while the productions of their new machinery are to be found in every city of America and Europe. The works are operated by water power, and connected by a railroad of their own with the New Haven and Northampton Railroad, affording equally quick freight communications with New York or Boston. It is understood that the new proprietors contemplate transferring at once the property and business to a corporation to be called "The Hayden Company," and that Mr. Joel Hayden, who for the past 20 years has been the resident partner at the factory, will superintend the manufacturing department. The company are already running full on orders, and have reopened the old warehouses of Hayden, Gere & Co. at 110 Oliver and 19 Union st., Boston, and 84 Beekman street, New York.

## MASSACHUSETTS.

The Wicks Manufacturing Company, Worcester, are putting machinery into the Ethan Allen shops, at the Junction, recently occupied by Forehand & Wadsworth, and will manufacture cotton warps. They will also continue their works at the mill at South Worcester.

The Hinkley Locomotive Works, Boston, which have just started up, have orders for one locomotive a week for the next three months, and have just added a hundred hands to their working force.

## RHODE ISLAND.

The contract for arms for Turkey will keep the Providence Tool Company at work for some time yet. When this is completed it is thought that there will be other work enough on hand to keep most of the men employed. Sewing machines of two new patterns are now being made.

The old-established manufactory of bobbin spools belonging to Moses Potter & Sons, in South Scituate, has been destroyed by fire. When the fire was discovered it was under such headway that nothing could be done to save it, and the entire stock and tools were consumed with it. The building was of wood, 4x24 feet, with an ell for the engine. How the fire originated is not known. The loss is estimated at \$7,000, on which there was no insurance. The factory had been in operation for 31 years, and was doing a good business at the time of the disaster.

## CONNECTICUT.

Since Mr. Stockwell's failure the Howe Machine Co., of Bridgeport, have been under the management of Col. Garrison of New York. The company have taken a new departure in the way of curtailing unnecessary expenses and re-establishing their credit. They have nearly 500 hands employed, and there are excellent prospects of an extensive fall trade.

The Faust Steel Company's mill at Windsor Locks is still idle on account of no orders.

The Pacific Iron Works, Bridgeport, are getting the large engine recently belonging to the New Haven Rubber Company into running order again. The engine is a Corliss cut-off, of about 300 horse-power. The

boilers for the Turkish government, which were made and paid for some months since, still remain at the works.

The Hon. Henry C. Robinson and Mr. William A. Healy have been elected on the board of directors of the Pratt & Whitney company of Hartford, in place of two members of the old board who have retired. Two other directors are to be chosen hereafter, making quite a change in the board of management. Mr. William A. Healy has been elected treasurer in place of Mr. R. F. Blodgett, but the latter retains the secretaryship of the company.

The Higginan Manufacturing Company have recently shipped a supply of trucks to equip a railroad in Russia.

The Weed Sewing Machine Company, Hartford, are running on full time, with about 125 hands.

## NEW YORK.

Work was resumed in nearly all of the departments of the Rensselaer rail mill on Tuesday, the 30th ult., giving employment to about 400 persons.

The following cable message was received on Wednesday of last week at the manufactory of the Walter A. Wood mowing machines, at Hoosick Falls: "Wood secured first prize, and the McCormick second, at the great three days' trial of binders in Middleburg, Holland, ending to-day."

"WALTER A. WOOD."

Messrs. Gilbert, Bush & Co., of Green Island, shipped 20 cars to the Metropolitan Elevated Railway Company last Monday.

## PENNSYLVANIA.

John Hetrich, who rented the machine shops and foundry in Bernville, formerly operated by Haag, Kline & Co., has started up the establishment, giving employment to a number of hands. Work is being pushed ahead vigorously. The shops had been idle for several years.

Dr. Robert Walter, the proprietor of the Mountain Home Park, at Wernersville, proposes erecting a monument upon the site of the first furnace built in Pennsylvania, which is on his property. It will be suitably inscribed and unveiled with appropriate ceremonies.

Messrs. F. & G. Brooke, of Birdsboro, have

commenced the construction of a dam across the Schuylkill, near the W. & N. R. R. bridge, in order to supply furnace No. 3 with water.

The iron works at Scranton are working about three-quarters time.

The Susquehanna Coal Company, at Nanticoke, are putting in an apparatus for burning common culm from the screens, which will save the company between \$30,000 and \$40,000 per year.

It is said that the Scottsdale Iron Works, which have been idle for a long time, will soon resume operations.

The Sharon Herald says: The shipments of pig iron from the Valley furnaces of that place are greatly in excess of the production.

The stock of pig iron in the Mahoning Valley is lighter than it has been for a number of years.

A Boston (Mass.) party visited the West Hamburg Iron Works for the purpose of inspecting the machinery and ascertaining its capacity. These works are in excellent condition, the last proprietor having made extensive improvements.

Mr. P. L. Weimer recently contracted with a party of capitalists of New York, acting under the name of the New Jersey Iron Spiegel Company, for the erection of a large anthracite furnace at Chester, New Jersey. Work will begin on the furnace at Mr. Weimer's works immediately, and it is to be completed in five months.

The hands of the Kensington iron mills in Philadelphia, comprising the employees of the Stephen Robins & Sons' Works, the Fairhill Works, Marshall, Brother & Co., the Philadelphia Steel and Iron Company, the Delaware Iron Works, and the Kensington Iron and Steel works, seem resolved to resist the reduction of ten per cent. in wages. By the new schedule the puddler, who was before receiving \$4 per ton, will receive \$3 and 60 cents, but out of this he must pay his helper \$1 and 20 cents, and, in addition to that, 25 cents that the owner of the mill always heretofore paid the helper must come from the pocket of the puddler, and, after all this, his wages will be \$2.15 per day.

The 25 cents additional was paid by the owners when the times were better, as the helpers complained that they were not receiving sufficient. The heater, who by the old schedule received 67 cents per ton, will receive by the new 55 cents, and, after paying his helper, will receive \$1.68 as his day's wages, provided, however, that he gets out 6 tons a day, and this is not considered an extra effort. The rollers, roughers and others will be similarly reduced. The mill owners, however, do not think that there will be a strike.

The Pottstown Iron Co.'s nail factory is so pushed with orders that proposition is on foot to work 11 hours a day. A very large order was received several days ago when they built a blast furnace at great expense which has proved to be a poor investment and the beginning of the company's trouble, though not the immediate cause of their failure. The embarrassed firms here owe the company largely, and, being unable to meet their obligations, it was only left for them to assign. Their liabilities are \$215,000, \$95,000 of which is in a first mortgage on all the company's property. As yet it is impossible to state what the assets will be. The company has invested over \$500,000, but it is thought that now not much more than enough to satisfy the mortgage could be realized. The failure was a genuine sensation to most of the business public of Cleveland and wholly unexpected by the employees, who are now out of employment, but most of whom will probably gradually get work with the Cleveland Rolling Mill Company.

The Bellaire Nail Works declared a dividend of 3 per cent. out of the earnings of the last six months.

The Falcon Iron Works, of Niles, are idle. But 10 furnaces are running in Brown, Bonnell & Co.'s Youngstown mill.

Over 900 mowers and reapers have been sold during the present season by the Buckeye Agricultural Works of Akron. The works will resume full operations about the roth of August.

At a recent meeting of the directors of the Gaylord Rolling Mill, it was resolved to ask an extension of creditors of one, two and three years. A statement of the affairs of the company is now being prepared with

likely that the mill would go on for some time. The nail plate mill at the Westerman Iron Works goes on Thursday morning. Nail factory and chain works will go on Monday next.

The P. & R. Rolling Mill at Reading is again in full operation on day and night turn. There are no large orders to be filled at this season of the year, but a stock of rails is being provided for the Reading Railroad and branches, and for the filling of future orders. The manufacture of 45-pound rails for the Brazilian Railroad has been suspended for the present, although nearly the quantity has been supplied that will

be required.

The Glendower Mills at Danville turned out 316 tons of 50-pound rails in five days, making only five rounds on Saturday. This is the most work ever turned out at this mill. Under the old National Iron Co. management about 50 tons per day was all that could be got out of the machinery. It is said that they have steady work for some time to come.

Wm. P. Allen & Co., successors to Chas. B. Allen, have just commenced the manufacture of boiler, bridge and ship rivets at the southeast corner of American and York streets, Philadelphia. They will also continue the manufacture of the "C. B. Allen" brand of cast-steel locomotive, passenger and freight car springs. The business was first started in 1855, and the new firm commence under favorable auspices.

A. Weed & Co. have commenced the manufacture of files and file machinery at 103 Ridge avenue, Philadelphia, and are meeting with a very fair measure of success.

## PITTSBURGH AND VICINITY.

McCullough, Dalzell & Co., Pittsburgh, are enlarging their crucible works in the 15th ward. They have erected a new building on the north side of the old works, and have made the original buildings three stories high. The foundation walls for new engines are completed, and the builders, Wm. Fisher & Sons, are to have them put in position in a few days. The firm are having one of Marshall Bros.' patent safety elevators put in the new works.

The iron mill of H. Lloyd & Son, Second avenue, Pittsburg, is partially shut down for repairs. The rolling mill stacks are being rebuilt.

It is reported that 40 men were discharged from the P. R. R. blacksmith shop in Altona during last week.

Sheriff Fife on Friday last sold 120 tons of common iron at 1½ cents per pound, and 600 tons of pig iron at \$14.25 per ton. Altogether the sale amounted to about \$30,000.

It was the property of Reese, Graff & Woods, and was sold on a judgment of James I. Bennett for use of John Moorhead. There is more to sell, but the sale was adjourned until Wednesday morning of this week.

Doyle & Co.'s glass works, on the South Side, destroyed by fire a short time since, are being reconstructed, and operations will be resumed in a few weeks.

Nearly 4000 freight cars are being built at the Altoona shops for the Fort Wayne and the Pan Handle railroads.

The Pennsylvania Forge and Iron Company, Pittsburgh, are about to start up their mill and scrap furnace.

Plunkett, Ihmsen & Co. of the South Side are now making chimneys without the crimp, employing about 90 men and boys.

Duncan & Sons, Ripley & Co., Blawell, Pears & Co., King, Son & Co., Richards, Hartley & Co., Doyle & Co., press houses, are still idle on the South Side.

The Keystone Bridge Company, Pittsburgh, will furnish the iron roof truss for the large stables to be erected in Georgetown by the Washington and Georgetown Passenger Railway Company. The company has also secured a contract from the city of Boston for the construction of an iron bridge to carry Dartmouth street over the intersection of the Boston and Albany and Boston and Providence railroads. It will be a wrought iron pin connection truss, 225 feet in length and 60 feet in width. It will be properly ornamented, and when completed will be an imposing structure.

The roof of the boiler house in the steel works of Smith, Sutton & Co., Allegheny, was damaged by fire on Wednesday evening of last week to the extent of \$1000.

Messrs. McIntosh, Hemphill & Co., machinists, Pittsburgh, are making some 16-ton housings for the Otis Steel Works at Cleveland, Ohio.

## WEST VIRGINIA.

Work will be resumed at the Wheeling Hinge Factory on the 12th of August.

## OHIO.

The Union Iron Works Company of Cleveland, organized in 1865, which failed last week, were prosperous till 15 months ago, when they built a blast furnace at great expense which has proved to be a poor investment and the beginning of the company's trouble, though not the immediate cause of their failure. The embarrassed firms here owe the company largely, and, being unable to meet their obligations, it was only left for them to assign. Their liabilities are \$215,000, \$95,000 of which is in a first mortgage on all the company's property. As yet it is impossible to state what the assets will be.

The company has invested over \$500,000, but it is thought that now not much more than enough to satisfy the mortgage could be realized. The failure was a genuine sensation to most of the business public of Cleveland and wholly unexpected by the employees, who are now out of employment, but most of whom will probably gradually get work with the Cleveland Rolling Mill Company.

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a view to submitting to an examination of the creditors.—*Portsmouth Valley Blade*.

Hecla Furnace, in the Hanging Rock region, pays 5¢ to 6½¢ per bushel for charcoal, \$1.50 to \$2.25 for ore, and wages range from 90 cents to \$1.15 per day. The furnace is making about 11 tons of iron per day.

The second steam hammer made by the Cuyahoga Works for the Otis Iron and Steel Company, Cleveland, has been set up at their works, and has been in operation for two weeks past.

The government have again awarded the Howe Scale Company of Cleveland the contract for supplying the Treasury and customs departments with the improved Howe Scales, this being the third year of the continuance of the contract. The Indian Commissioners have also awarded the same company the contract for wagon, platform, post office and counter scales for the present year.

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New York Fire Brick &  
STANISLAND  
CLAY RETORT WORKS,  
Established 1843.

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Cupola Brick, for McKenzie Patent, and others. Fire Mortar, Ground Brick, Clay and Sand. Superior Kaolin for Rolling Mills and Foundries. Stone Ware and other Fire Clay and Sand, from my own mines at New Jersey and Staten Island, by the cargo or otherwise.

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Successor to

PALMER, NEWTON & CO.,

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Manufacturers of

**FIRE BRICK**  
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A. HALL & SONS, Perth Amboy, N. J.  
ESTABLISHED 1846.

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ESTABLISHED 1866.

**FIRE BRICK**

of reliable quality for all purposes, manufactured o  
House and other Tile, Cupola Brick, &c., & Delivery in  
Burt's Creek, New Jersey. Manufacture: Van Dyke,  
Elizabeth, Richards and Partition Sts., Brooklyn, N. Y.  
Office No. 88 Van Dyke St.

**Brooklyn Clay Retort**  
AND  
**FIRE BRICK WORKS.**

Manufacturers of Clay Retorts, Fire Bricks, Ga  
House and other Tile, Cupola Brick, &c., & Delivery in  
Burt's Creek, New Jersey. Manufacture: Van Dyke,  
Elizabeth, Richards and Partition Sts., Brooklyn, N. Y.  
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**Watson Fire Brick Manufactory**  
ESTABLISHED 1836.

JOHN R. WATSON, Perth Amboy, New Jersey,  
Manufacturer of

**FIRE BRICK,**  
For Rolling Mills, Blast Furnaces, Foundries,  
Gas Works, Lime Kilns, Tanneries, Boiler  
and Grate Setting, Glass Works, &c.  
Fire Clays, Fire Sand, and Kaolin for Sale

**HENRY MAURER,**  
Proprietor of the  
**Excelsior Fire Brick & Clay**  
Retort Works,  
Manufacturer of FIRE BRICK, HOLLOW  
BRICK AND CLAY RETORTS.  
WORKS | PERTH AMBOY, NEW JERSEY.  
Office & Depot: 415 to 423 East 23d St., N. Y.

**TROY FIRE BRICK WORKS**  
Troy, N. Y.,  
JAMES OSTRANDER & SON,  
ESTABLISHED 1846,  
Manufacturers of

**FIRE BRICK,**  
Tuyeres, Tiles, Blast Furnace Blocks, etc. Miners and  
Dealers in Woodbridge Fire Clay and Sand, and Staten  
Island Kaolin.

Established 1864.  
**CARDNER BROTHERS,**  
MANUFACTURERS OF

**STANDARD SAVAGE**  
Fire Brick, Tile & Furnace Blocks,  
OF ALL SHAPES AND SIZES.

Clay Gas Retorts and Retort Settings,  
AND  
Miners and Shippers of Fire Clay.

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WORKS: Mt. Savage Junction, Md., and Lockport, Pa.

**BORGNER & O'BRIEN,**  
Manufacturers of

Fire Bricks,  
Clay Gas Retorts,  
Retort Settings,  
Tiles, Blocks, &c., &c.

23d St., below Vine,  
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Eighteen years' practical experience.

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**Crane & Chapuis,**  
**FELT MANUFACTURERS.**

Polishing Felts of every description.

31 & 33 Courtlandt St., PATERSON, N. J.

95 Chambers St. Read St., 77.

E. S. DODGE  
**PRINTING**

COMPANY.  
ED. HUTCHINGS, Sup.

NEW YORK.



## NOTICE.

We wish to inform the trade that  
besides our own there are two other  
firms in the city of Philadelphia manu  
facturing Shovels, Spades and Scoops  
under the name of **ROWLAND**, and  
the way we distinguish our goods from  
theirs is by branding them

### B. Rowland & Co. CAST STEEL.



All goods of our make branded  
with the **ANCHOR** are warranted in  
every particular, so be particular to  
see that you get **B. ROWLAND &**  
**CO.'S ANCHOR BRAND GOODS** if  
you wish the guarantee as to their  
quality. Respectfully,

### B. Rowland & Co.,

No. 27 North Fifth St.,

PHILADELPHIA, U. S. A.

have not yet been published. The production in 1876 was 17,047,761 tons, in 1875 it was 16,949,031 tons, and in 1874 it was 17,059,547 tons. France imports coal from Germany, Great Britain and Belgium. From Great Britain she imported 2,952,372 tons in 1877, against 3,250,564 tons in 1876.

It will be seen from the foregoing statistics, which are at least sufficiently correct for comparative purposes, that the French iron trade has declined in volume during the past year. The depression, however, has been most felt in prices, which have sympathized with the decline in other countries. But, notwithstanding these unfavorable results, the French iron and steel industries are not suffering the same degree of prostration that prevails in Great Britain, Germany, the United States, and some other countries. Other industries of France have grievously suffered within the past two or three years, largely through the inability of other countries to purchase the articles of luxury in the manufacture or production of which she so greatly excels, and largely through the adoption by them of the same protective policy which has served her people so well; but her iron and steel industries have been maintained in fair activity because of her tariff, which makes it difficult for British and Belgian ironmasters to compete with French ironmasters in French markets. A single illustration will show how the French iron and steel industries have been benefited by protection within the past year. Bessemer steel rails cannot be made at a profit in France for much less than £8, or \$40, and contracts have recently been made at about this price; yet either England or Belgium, if not excluded by protective duties, would have been glad to furnish rails at £6, or \$30. The French tariff has within the past year saved the Bessemer steel industry of France from foreign competition which it would have been powerless to resist.

The French newspaper, *L'Ancre*, gave at the beginning of January last the following review of the French iron trade in 1877:

"1877, as a year of trade, has been one of dismal disaster, and the iron trade has been one of those which has suffered the most cruelly. During the course of the years immediately preceding 1877 business had been slackening, and prices coming down. But at the opening of 1877 people imagined that the end of the crisis was approaching; the dullness had lasted so long that its further duration seemed impossible, while the prosperity of the exhibition was to bring with it began to be discounted. But the course of events falsified all these expectations; the crisis reached a pitch of unexampled acuteness, and ironmasters had to make concessions on prices which were themselves little better than ruinous. The effects of the dead-lock produced by the war in the East have been aggravated for France by an internal conflict of even greater moment to her interests. For the present this is ended. The year 1877 was to have brought about beneficial changes in our economical and fiscal relations. Its actual good deeds have been absolutely nil."

"The consumption of iron and steel in France has increased some 40,000 to 50,000 tons in each year from 1873 to 1875. It slackened considerably in 1876, and possibly may have fallen behind the average consumption; there is small likelihood that the ground thus lost has been recovered in 1877. Even then its maximum would only be some 1,100,000 tons, when it was 20,000 tons more in 1875. These figures will show the present state of the iron trade. Production is beyond consumption. Production has been too rapid, and must wait until an equilibrium has been established."

"Prices of iron in France in June of the present year were as follows: Coke-made iron rails sold at £6. 12/ per ton; superior qualities brought £6. 16/ per ton. Good machine iron was quoted at £8 to £8. 4/ per ton. In the Nord large contracts for iron have been concluded at £6. 2/ per ton. Thick plates are maintained in the Nord at £8. 16/ per ton. First-class rolled iron has been quoted in the Meurthe-et-Moselle at £6. 12/ per ton.

(To be Continued.)

The hereditary king of Cyprus has turned up at St. Petersburg. He wants to sell his birthright to England. He claims to be the last of the Lusignans, descendants of the kings of Cyprus and Armenia, and has had some sort of recognition from the Russian Imperial family, on whose bounty he has lived since his fortune was swept away in the futile insurrection of 1827. The last of the Lusignans, a penniless artisan, was said to have died in Italy last year, leaving several daughters, who were adopted by charitable folk.

Forty-five millions of pairs of sewed shoes and 55,000,000 of pairs of pegged shoes were made and sold by the manufacturers of the United States in 1877, and 85 per cent. of the work done on these shoes was done by machinery. The uppers are cut out by hand, simply because of the variableness of the quality of the leather in the same skin. The soles are cut out by machinery, and the binding, pasting, closing, crimping, stitching, heelng and polishing are all done by machinery, without the aid of human hands.

Michael Zacehewski, a Pole, who was employed in the nickel works on Cooper's Creek, Camden, N. J., was instantly killed on the 2d inst. by the bursting of a huge pot into which he was pouring molten metal. A stream of water was flowing into the pot, the hot metal was poured too rapidly, and steam was generated, which caused the explosion. Two laborers, Jakoliski and Bickling, were also injured, the first named, it is feared, fatally.

The safety of railway travel on the Continent is largely imaginary. In April, this year, 25 trains got off the rails upon German railways, and there were also 10 collisions. Four of the trains in collision were passenger trains. These statistics do not speak very favorably for German railway management.

The magistrates at Hanley, England, having found it useless to fine miners for carrying lucifer matches down into coal pits, have begun to send the offenders to jail.

## THE PARIS EXPOSITION.

Notes of American Exhibits.

(From our Special Correspondent at Paris).

The show of farm and garden tools, such as forks, hoes and rakes, is one of the most creditable parts of the American exhibit. Our tools of this class have had a most enviable reputation abroad for years. Their lightness and strength have been a most capital recommendation, and the beauty of their proportions and the finish of the parts, when it has been found that these do not hide faults of construction and inferior materials, have been additional inducements to purchasers. Among the tools of the different makers it would be a difficult matter to decide between them from external appearance. They are all deserving of great praise, and we believe we are strictly within the bounds of truth when we say that no other country in the world can show such progress and perfection in the styles and manufacture of these necessary implements, a truth that is fully attested by the foreign demand which for years has existed for these goods, and which steadily increases.

BROWN, HINMAN & CO., Columbus, Ohio, have on exhibition an elegant assortment of their garden and farm tools. In steel goods they show every variety of manure and barley forks, spading forks, hay and straw forks, potato and manure hooks, socket and shank field hoes, cotton hoes, mortar and street hoes, handled planters' hoes, garden rakes, weeding rake and hoe, &c., and a good line of malleable garden rakes. In wood goods they exhibit an assortment of Lamson's patent scythe snaths, grain cradles, &c., handles for forks, hoes and shovels, hand hay rakes, &c. The goods of this house show an excellent finish, and with those exhibited by other firms fully sustain the very enviable reputation America has acquired for the manufacture of this grade of implements.

WITTINGTON & COOLEY MFG. CO., of Jackson, Mich., have a large and handsome assortment of garden and farming tools, embracing socket and solid shank field hoes, sharp point 2, 4 and 6 prong weeding hoes, cast steel and malleable garden rakes; hay, straw, manure, barley, header, spading, shiue, fish, tanner's and other forks; cast steel potato and manure snaths, scythe snaths, grain cradles, corn knives, hay knives, &c. This factory has been in operation for 30 years, and was incorporated last year. It has had a very extensive export trade for some years, and it is stated that their patterns and styles are adapted to and sold in all the markets of the world. The goods are elegantly finished, and they claim that promptness in adopting every valuable improvement, and the uniform and reliable excellence of the material, temper, workmanship and finish of their tools have given them a substantial and world-wide reputation.

THE AUBURN MANUFACTURING CO., Auburn, N. Y., make a most attractive display of their splendid line of hand tools for farm and garden purposes. Upon a large circular platform they have erected an arched structure of elegant design, surrounded with sample boards showing their tools from every point of view. Among the goods we noticed a fine assortment of steel manure forks; hay and straw forks, both round and oval; spading forks, barley and coke forks, and forks for special purposes; potato hooks, garden rakes, both steel and malleable, &c. They also show a fine assortment of field, socket and shank hoes; handled planters' hoes, weeding hoes for garden and farm use, square eye planters' hoes, &c. They also exhibit a very large variety of edge goods, such as grain and grass scythes, bush or bramble scythes, Western corn knives, hay and straw knives and grass hooks. In wood goods they exhibit grain cradles, Lamson's patent scythe snaths, hand rakes and forks, hoe and rake handles. The display is the largest of its kind in the American section, and being so advantageously situated attracts a good deal of attention and deserved admiration. In order that visitors may see the goods exactly as they are turned out from the factory, a bundle of each of the specimens shown on the sample boards is also on exhibition, and as nearly 300 different kinds of goods are shown, these make around the platform of their structure quite a wall of glistening steel.

OLIVER AMES & CO., of North Easton, Mass., exhibit a handsome case of shovels, spades and scoops, draining spades and shovels, and spades for special purposes. These goods are shown in the ordinary finish required by the trade, both black and bright, and also some highly finished specimens of the same goods. They also exhibit a very respectable looking D-handle shovel and D-handle spade, both of which were made by Oliver Ames in 1812. The style differs but little from the goods in use at the present day.

SHEBLE & FISHER, Fairmount Fork Works, Philadelphia, make a very good display of forks of different varieties, such as hay, manure, spading, turnip, potato, &c. The peculiarity of the forks made by this firm is that the tines and shanks are made from one piece of solid cast steel. They claim that the defects and weakness, which to a greater or less degree must result from welding, are avoided, and a much stronger fork in every way is made.

TRUMP BROS., Wilmington, Del., exhibit in the Machinery Hall a number of their Dexter and Fleetwood saws and machines in operation. These little machines are the admiration of all who see them. The Fleetwood saw carries coarse blades three-sixteenths of an inch wide or the finest Swiss or jeweler's saws, sawing wood one inch thick and under. They are adapted to all descriptions of light scroll or fret sawing in wood, bone, ivory, shell or metal. The beauty and finish of the work done on these machines is a source of constant surprise, and shows that it is more than a mere toy. The inlaid and silhouette work is especially beautiful, the samples shown in connection with the saw being most ex

quisite in the tracery and delicate in their lines. The advantages claimed for the Fleetwood saw are: Simplicity of construction, strength of all the parts, compact and graceful form, quiet movement, and the low price at which it is sold; and that with little or no experience most beautiful articles, quite equal to the finest Italian and Swiss fret or scroll work, can be made; brackets, easels, picture frames, boxes, table mats, &c., in open scroll, inlaid or mosaic work. For the Dexter, Trump Bros. claim that it is a triumph of simplicity and good work. Its exceedingly low price, combined with good workmanship and practical usefulness, puts it far in advance of anything of the kind ever before manufactured. The distance from saw to back of frame is 12½ inches. It will hold the finest to coarsest saws, and will cut 1½-inch stuff, if desired, but is intended especially for light and rapid cutting. All of the machines made by the firm are warranted in every respect. They are very carefully made of the finest material, and the best mechanical skill is employed in their construction.

One of the most tastefully arranged exhibits in the American department is the display of agricultural forks of

BATCHELLER & SONS  
of Wallingford, Vt. A beautiful canopy structure consisting of columns and arches decorated in gold and colors, is the groundwork of the exhibit, and on the columns and in the rear of the canopy the large variety of forks made by this firm is shown. At the corners in front are columns of forks, and looking past this under the archway in the rear is a trophy of forks. The forks themselves are worthy of their installation, showing all the features which have given American tools of this class such enviable reputation.

M. SEWARD & SON,

manufacturers of carriage hardware, New Haven, Conn., exhibit a large variety of clips and other light articles of carriage, wagon, truck, &c., hardware of a great variety of styles and admirably made. They are all manufactured from the best Norway rods and fitted up in the best manner, and be very smooth they require no filing to paint. Their factory, which has been established for more than 32 years, occupies space of about 3000 square yards, half of which is built over. It employs 30 to 35 hands, and 60 machines of various kinds valued at \$40,000, exclusive of a 30-horse-power steam engine. Its business amounts to about \$150,000 a year, and it turns out annually 200,000 dozen clips and 175,000 dozen sundry articles of light carriage hardware. This house has just increased the number of articles it makes.

ANDREW ALBRIGHT,  
Newark, N. J., makes an attractive display of rubber-coated harness and carriage trimmings. The base of the trimmings is a metal core, either iron, bronze or German silver, covered with a coating of hard india-rubber, a tough, elastic composition, impervious to acids, water and atmosphere, will not tarnish, and protects the leather from iron rust, &c. A coupé, coach and light double harness are shown, and a variety of carriage trimmings.

BAILEY WRINGING MACHINE CO.,  
99 Chambers street, N. Y., have a good display of their wringers in the agricultural annex. It comprises 18 samples of various sizes of the Novelty, Improved Novelty, Cog-Wheel Novelty, and Cog-Wheel Excelsior for hand, and a No. 60 for hand or power. The display is very creditable, both in the variety of wringers shown, the quality of materials used and workmanship.

In Machinery Hall

STEPHENS PATENT VISE COMPANY,  
41 Dey street, New York, exhibit eleven different sizes and styles of their patent parallel vises with swivel, taper, pipe and other attachments, as well as their patent planer vise. Among the merits claimed for the vise are the following: Its parts are interchangeable; it opens further, works easier, holds firmer, is heavier and more durable than any other vise; it is worked by clamp and toggle joint; its movable jaws cannot twist from side to side; the slightest back motion of the handle instantly frees the work; there is no wear to the racks, for they merely engage and travel together without rubbing. The vises shown are arranged on a bench, so that parties interested can examine them and their working. They are made by the Colts Arms Company, Hartford, which is a sufficient guarantee for the quality of the workmanship. A prominent English periodical, in speaking of these vises, said, editorially: "The power of Stephens' patent vise is equal to every requirement. Being constructed upon correct principles, years of constant use will not wear its parts. But in the ordinary vises considerable wear and tear in the threads is inevitable, with consequent deterioration. Stephens' vise is the handsomest and most effective in use."

THE SETH THOMAS CLOCK COMPANY, of Thomaston, Conn., make a beautiful display of clocks and movements. In the center of the alcove assigned them, which is cased in black walnut and upholstered in gold and maroon rep, is a large tower clock, running. It is what they know as No. 12. It strikes the hour and quarters, is fitted with Dennison's gravity escapement and compensated zinc and steel pendulum. The ball of this monster clock weighs 300 pounds. Around the sides of this alcove are shown a large number of the various styles of common house and office, desk and calendar clocks. One case is full of movements without faces, varying in size from the nutmeg to the regulator, beating seconds and half seconds, all in operation. It is a very complete and interesting exhibit.

F. KROEBER,  
Forestville, Conn., exhibit a line of clocks, mostly of the cottage pattern, for which they claim the merit of cheapness and reliability. All the clocks have a patent device by which the hands can be turned each way without any injury to the clock.

THE ANSONIA CLOCK COMPANY  
make a very fine display in the main building of clocks and clock movements, including their various styles of round, hexagon cottage, gothic, mantel, &c., in gilt, silver

nickel, bronze, rosewood, black walnut and other finishes. The exhibit is especially noticeable for the variety of odd and attractive devices and combinations of clocks with various useful and ornamental articles. Among others we notice inkstands and thermometers combined with clocks, clocks in the hubs of wheels and of ships' helms, in the wheels of the car of time and many others.

THE VICTOR SEWING MACHINE CO., Middletown, Conn., exhibit their "Victor" chuck and micrometer caliper. This chuck embodies new and essential features, for which the manufacturers make the following claims: 1st. It is the only adjustable drill chuck, and is more simple, practical and effective than any in the market. 2d. The chuck is self-tightening and the grasping power of the clutches is much greater than in other chucks. 3d. The clutches being flush with the face or front of the chuck, the workman has less difficulty in adjusting the drills and greater durability is assured, as they are not liable to be broken by any strain or twist or by dropping the chuck. 4th. The levers are enlarged and rounded at their fulcrums, forming spherical bearings which rest against adjustable set-screws, producing a sure and easy adjustment at the will of the operative. 5th. The chuck is steel throughout and of the finest mechanism. The chuck holds from 0 to ¾ and will carry ¾ by reducing the shank. The micrometer caliper is a very good sample of this reliable and convenient tool, which is destined eventually, we believe, to supersede the old cumbersome and inaccurate gauge plates. Indeed, to machinists and tool makers it is indispensable now on work requiring very accurate and close measurement. Its capacity is one inch and is graduated to one-thousandths, but can readily be set one-half and quarter thousandths, and is so constructed that any wear resulting from use can be readily adjusted.

D. E. WHITON,  
West Stafford, Conn., exhibits some samples of a chuck manufactured by him.

SMITH & EGGE,  
Bridgeport, Conn., exhibit a small chain of very simple but very ingenious construction, the links being machine-wrought and the chain formed by machinery. It is shown in brass and nickel-plate in long pieces and made into watch chains. They also exhibit a line of their patent padlocks.

THE NATIONAL SPRING CO., New York, exhibit in the Main Building samples of their volute and coil car springs, also Vose, Dinsmore & Co.'s rubber center spiral freight spring, and a model of an outside bearing car truck for a 4 feet 8½-inch gauge, the latter the invention of Mr. Richard Vose.

MORSE TWIST DRILL AND MACHINE CO., of New Bedford, fill a show case near the main aisle of the Machinery Hall with samples of their manufactures, including Morse patent straight-lip increase twist drill, Beach's patent self-centering chuck, solid and shell reamers, bit stock drills, drills for Coes, Worcester, Hunter and other hand drill presses, center and adjustable drill chucks, drill grinding machines. The tools show excellent material and superior workmanship. All are beautifully polished and show the high character of the steel used. The range of sizes shown is very marked. The assortment includes drills as fine as a cambric needle and some two inches in diameter and two feet long. The utmost care is taken in the different processes of manufacture to insure perfect accuracy, and all tools are exact to Whitworth's standard gauges.

American live cattle are arriving in London in great numbers. One thousand reached there on one day, and the London Graphic says that some of them were so "mountainous" that they might be made fit subjects of decent itinerant shows."

**Special Notices.**

H. Y. CASTNER,  
Analytical Chemist and Assayer.

Assays of Ores and Analytical Work of every character promptly attended to. Specialty made in the Analyses of Coals, Pig Irons and Iron Ores.

No. 43 Pine St., New York.

Terms moderate. Instruction for obtaining proper sample furnished upon application.

**TWO YOUNG MEN**

With moderate cash capital wish to purchase an established Hardware Business.

Address, X. Y.,  
Office of The Iron Age, 83 Reade St., N. Y.

**WANTED**—A SITUATION WITH A HEATER, Range and Stove House anywhere, as salesman and manager, or with a foundry.

Address, Z. A.,  
Care 259 Pier St., New York.

**SITUATION WANTED**—AS TRAVELING AGENT. Eleven years' experience in the Hardware business. Have traveled five years for a manufacturing house in New York city. Good city and State trade. Have also traveled in the Western States. Satisfactory reason for leaving present employers. Address, LUCKS,  
Office of The Iron Age, 83 Reade St., N. Y.

**Wanted,**

Situations by two thoroughly practical men, viz., Roller and Roll Turner. Fully experienced in Rails (iron or steel), Angle, Tee, Channel, Beam, Merchant and Band Irons. Best of reference from last employer. Address, J. CAWFIELD,  
Newburgh, N. Y.

**THE**

Norwich Lock Mfg. Co.

Norwich, Conn.,

Having largely increased their line of Locks,

Knobs, &c., and the facilities for their manufac-

ture, solicit the especial attention of jobbers and

purchasers for export to their goods.

SIDNEY TURNER, President,

CHAS. H. BEEBE, Treasurer.

Care of P. O. Box 813, Bridgeport, Conn.

**WANTED**—A first-class business man familiar with machinery and manufacturing, capable of handling large bodies of men, desires a responsible position. References satisfactory. Address, IRON AND STEEL,



Oval Scalloped Patty Pans.			
Nos. ....	100	110	
Inches ..... 3 1/2 1 1/2 2 3	3 1/2	4 1/2	
Per gross ..... \$1.00 1.50	\$1.00	1.50	
Deep Patty Pans, Plain, per gross.	\$2.00	1.65	
Oblong Patty Pans, per gross.	1.65	1.40	
Star Patty Pans, per gross.	1.40	1.40	
Heart Patty Pans, per gross.	1.40	1.40	
Shell Patty Pans, per gross.	1.25	1.25	
Bucket Covers.			
Quarts. .... 1/2 1 1/2 2 3	1/2 1 1/2 2 3	1/2 1 1/2 2 3	
Inches. .... 4 1/2 5 3/8 5 1/2 6 5/16 6 1/2	4 1/2 5 3/8 5 1/2 6 5/16 6 1/2	4 1/2 5 3/8 5 1/2 6 5/16 6 1/2	
Per gross. .... \$2.00 2.60 3.00 3.40 4.25	\$2.00 2.60 3.00 3.40 4.25	\$2.00 2.60 3.00 3.40 4.25	
Quarts. .... 4 6 8 10 12	4 6 8 10 12	4 6 8 10 12	
Inches. .... 7 11 16 8 1/2 9 1/2 10 1/2	7 11 16 8 1/2 9 1/2 10 1/2	7 11 16 8 1/2 9 1/2 10 1/2	
Per gross. .... \$5.75 6.50 8.00 8.50 11.50	\$5.75 6.50 8.00 8.50 11.50	\$5.75 6.50 8.00 8.50 11.50	
Cake Box Covers.			
Quarts. .... 11 12 13	11 12 13	11 12 13	
Per gross. .... \$15.00 18.00 22.00	\$15.00 18.00 22.00	\$15.00 18.00 22.00	
Pot Covers.			
Quarts. .... 7 1/2 8 8 1/2 8 1/2 8 1/2	7 1/2 8 8 1/2 8 1/2 8 1/2	7 1/2 8 8 1/2 8 1/2 8 1/2	
Per gross. .... \$5.75 5.95 6.00 6.15 6.25	\$5.75 5.95 6.00 6.15 6.25	\$5.75 5.95 6.00 6.15 6.25	
Trays for Cash Boxes.	4.50	5.00	
Boxes, Square, Crystallized, per nest.	4.50	4.50	
Boxed, Cake, Round.			
Small. Medium. Large. Nest of three.			
Each. .... 8.00 1.10 1.35	8.00 1.10 1.35	8.00 1.10 1.35	
Cake Boxes, Round, Crystallized, per nest.	3.50	3.50	
Boxes, Cash.			
Quarts. .... 1 1/2 2 3 4 6 8	1 1/2 2 3 4 6 8	1 1/2 2 3 4 6 8	
Per doz. .... \$2.25 2.75 3.25 4.00 5.00 7.50	\$2.25 2.75 3.25 4.00 5.00 7.50	\$2.25 2.75 3.25 4.00 5.00 7.50	
Boilers, Coffee.			
Quarts. .... 3 4 6 8 10 12	3 4 6 8 10 12	3 4 6 8 10 12	
Per doz. .... \$4.50 5.50 6.50 9.00 12.00 18.00	\$4.50 5.50 6.50 9.00 12.00 18.00	\$4.50 5.50 6.50 9.00 12.00 18.00	
Boilers, Coffee, with Pit Bottoms.			
Quarts. .... 6 7 8 9	6 7 8 9	6 7 8 9	
Per doz. .... \$8.00 7.00 6.50 9.50 10.50 12.50	\$8.00 7.00 6.50 9.50 10.50 12.50	\$8.00 7.00 6.50 9.50 10.50 12.50	
Boles, Dredge.			
Small. \$6; large. \$7.50			
Per doz. .... 5.50 7.00	5.50 7.00	5.50 7.00	
Plain.			
Per doz. .... \$6.00 6.50 7.50 9.00	\$6.00 6.50 7.50 9.00	\$6.00 6.50 7.50 9.00	
Boilers, Farina.			
Quarts. .... 2 3 4 6	2 3 4 6	2 3 4 6	
Per doz. .... \$6.50 7.00 8.00 9.50	\$6.50 7.00 8.00 9.50	\$6.50 7.00 8.00 9.50	
Boilers, Milk.			
Quarts. .... 2 4 6	2 4 6	2 4 6	
Per doz. .... \$10.00 12.00 15.00	\$10.00 12.00 15.00	\$10.00 12.00 15.00	
Boles, Lunch.			
Fold-Book. Small. Large. Ing.			
Per doz. .... \$4.00 2.00 2.75	\$4.00 2.00 2.75	\$4.00 2.00 2.75	
Bowls, Sugar, per gross.	3.50	3.50	
Boxes, Pepper.			
Small. \$3.50; large. \$4.00			
Boxes, Spice, Square, Round Inside Boxes.			
Quarts. .... 1/2 1 1/2 2 3	1/2 1 1/2 2 3	1/2 1 1/2 2 3	
Per doz. .... \$10.00	\$10.00	\$10.00	
Boles, Spice, Desp. Top, per doz.	2.75	2.75	
Boles, Spice, Square, Inside Boxes.	9/16 inch, per doz.	9/16 inch, per doz.	
Boxes, Sugar.			
Nest of four. Nest of six. Nest of eight.			
Per nest. .... \$1.40 2.25 4.50	\$1.40 2.25 4.50	\$1.40 2.25 4.50	
Candlesticks, Common.			
Japaned. —Plain.			
Nos. .... 1 2 1 2 1 2	1 2 1 2 1 2	1 2 1 2 1 2	
Per gross. .... \$7.00 6.50 6.50 6.00	\$7.00 6.50 6.50 6.00	\$7.00 6.50 6.50 6.00	
Candlesticks, Deep. —Plain.			
Nos. .... 1 2 1 2 1 2	1 2 1 2 1 2	1 2 1 2 1 2	
Per gross. .... \$17.00 13.00 15.00 11.00	\$17.00 13.00 15.00 11.00	\$17.00 13.00 15.00 11.00	
Canisters, Grocers.			
Small. \$10.50; large. \$13.50			
Canisters, Common.			
Pounds. .... 1/2 1 2 3	1/2 1 2 3	1/2 1 2 3	
Per gross. .... \$10.50 15.00 24.00 30.00	\$10.50 15.00 24.00 30.00	\$10.50 15.00 24.00 30.00	
Canisters, Powder.			
1/2 kg. \$6.00; 1 kg. \$9.00			
Canisters, Hinged.			
Pounds. .... 1 2 3 4 6	1 2 3 4 6	1 2 3 4 6	
Per doz. .... \$1.70 3.00 3.25 3.65 4.75	\$1.70 3.00 3.25 3.65 4.75	\$1.70 3.00 3.25 3.65 4.75	
Round Tea-Pot Breasts and Covers, Spun.			
Nos. .... 141 142 143 144 145 146	141 142 143 144 145 146	141 142 143 144 145 146	
Pints. .... 2 3 4 5 6	2 3 4 5 6	2 3 4 5 6	
Plain, per gross. .... \$4.50 5.00 5.50 6.00 7.00	\$4.50 5.00 5.50 6.00 7.00	\$4.50 5.00 5.50 6.00 7.00	
Rethined, per gross. .... \$5.50 6.00 6.50 7.00 8.00	\$5.50 6.00 6.50 7.00 8.00	\$5.50 6.00 6.50 7.00 8.00	
Round Tea-Pot Breasts and Covers, Hinged.			
Nos. .... 141 142 143 144 145 146	141 142 143 144 145 146	141 142 143 144 145 146	
Pints. .... 2 3 4 5 6	2 3 4 5 6	2 3 4 5 6	
Plain, per gross. .... \$5.50 6.00 6.50 7.00 8.00	\$5.50 6.00 6.50 7.00 8.00	\$5.50 6.00 6.50 7.00 8.00	
Round Tea-Pot Breasts and Covers, Rimmmed.			
Nos. .... 151 152 153 154 155 156	151 152 153 154 155 156	151 152 153 154 155 156	
Pints. .... 2 3 4 5 6	2 3 4 5 6	2 3 4 5 6	
Retinned, per gross. .... \$6.75 7.00 7.50 8.25 9.00 10.00	\$6.75 7.00 7.50 8.25 9.00 10.00	\$6.75 7.00 7.50 8.25 9.00 10.00	
Round Tee-Pot Breasts and Covers, Spun.			
Nos. .... 161 162 163 164 165 166	161 162 163 164 165 166	161 162 163 164 165 166	
Pints. .... 2 3 4 5 6	2 3 4 5 6	2 3 4 5 6	
Per gross. .... \$8.25 8.50 9.00 9.50 10.50 11.50	\$8.25 8.50 9.00 9.50 10.50 11.50	\$8.25 8.50 9.00 9.50 10.50 11.50	
Canopies, with Rings.			
Per gross. .... \$8.25 8.50 9.00 9.50 10.50 11.50	\$8.25 8.50 9.00 9.50 10.50 11.50	\$8.25 8.50 9.00 9.50 10.50 11.50	
Canopies, without Rings.			
Per gross. .... \$8.15 8.25 8.30 8.35 8.40 8.50	\$8.15 8.25 8.30 8.35 8.40 8.50	\$8.15 8.25 8.30 8.35 8.40 8.50	
Stovepipe Collars, Tin.			
Per gross. .... \$4.00 4.50 5.00 5.50 6.00 7.00	\$4.00 4.50 5.00 5.50 6.00 7.00	\$4.00 4.50 5.00 5.50 6.00 7.00	
Stovepipe Collars, Japanned.			
Per gross. .... \$5.35 .55 .60 .70 .75 .85	\$5.35 .55 .60 .70 .75 .85	\$5.35 .55 .60 .70 .75 .85	
Coffee Pot Covers, Plain.			
Quarts. .... 1/2 2 3 4 5 6	1/2 2 3 4 5 6	1/2 2 3 4 5 6	
Per gross. .... \$1.50 1.60 1.65 2.00 2.75 3.00	\$1.50 1.60 1.65 2.00 2.75 3.00	\$1.50 1.60 1.65 2.00 2.75 3.00	
Coffee Pot Covers, Rimmmed.			
Per gross. .... \$2.25 2.50 2.75 3.00 3.50 4.00	\$2.25 2.50 2.75 3.00 3.50 4.00	\$2.25 2.50 2.75 3.00 3.50 4.00	
Oval Boiler Covers, Planished.			
Per gross. .... 6 7 8 9	6 7 8 9	6 7 8 9	
Per gross. .... \$2.10 2.65 3.15 3.90	\$2.10 2.65 3.15 3.90	\$2.10 2.65 3.15 3.90	
Oval Boiler Covers, Flat Edge.			
Per gross. .... 6 7 8 9	6 7 8 9	6 7 8 9	
Per gross. .... \$2.85 2.35 2.90 3.70	\$2.85 2.35 2.90 3.70	\$2.85 2.35 2.90 3.70	
Tin Knobs.			
Nos. .... 1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	
Per gross. .... \$0.25 .30 .35 .35	\$0.25 .30 .35 .35	\$0.25 .30 .35 .35	
Coffee Boiler Lips, to Rivet.			
Small. \$0.80; large. \$1.10			
Coffee Boiler Lips, to Solder, per gross.	1.25	1.25	
Can Nozzles and Corks, per gross.	3.00	3.00	
Grater Plates.			
Sheets. .... 3/4 1/2 1	3/4 1/2 1	3/4 1/2 1	
Per gross. .... \$3.00 6.00 11.50	\$3.00 6.00 11.50	\$3.00 6.00 11.50	
Candle Mold Pans.			
Holes. .... 3 4 5 6 8 10 12	3 4 5 6 8 10 12	3 4 5 6 8 10 12	
Per gross. .... \$1.25 1.50 1.75 2.50 3.00 3.50	\$1.25 1.50 1.75 2.50 3.00 3.50	\$1.25 1.50 1.75 2.50 3.00 3.50	
Candle Mold Tubes and Tips, per gross.	3.00	3.00	
Fan Studs, per gross.	3.00	3.00	
Chamber Pal Trimmings.			
Nos. .... 2 3 4 5 6 7	2 3 4		

## THE IRON AGE.

Yellow Metal.....	10	20	...
Brass, heavy.....	10	20	...
Brass, light.....	10	20	...
Composition, heavy.....	10	20	...
Lad. oil.....	10	20	...
Tin Lead.....	10	20	...
Zinc.....	10	20	...
Pewter, No. 1.....	10	20	...
Pewter, No. 2.....	10	20	...
Wrought Iron.....	pr ton. \$16.00	20	...
Light dock.....	10	20	...
Stove Plate.....	10	20	...
Machinery do.....	10	20	...
Grate Bars.....	10	20	...

The prices current for Rags, &c., are as follows:

Cavans, Linen.....	per lb	3 c. @ 3 c.	...
" Cotton, No. 1.....	"	3 c. @ 3 c.	...
" No. 2.....	"	1 c. @ 1 c.	...
White, No. 1.....	"	2 c. @ 2 c.	...
" No. 2.....	"	1 c. @ 1 c.	...
Seconds.....	lb.	1 c. @ 1 c.	...
Mixed, Woolen.....	"	2 c. @ 3 c.	...
Soft, do.....	"	6 c. @ 7 c.	...
Very soft, do.....	"	3 c. @ 4 c.	...
Jute butts.....	"	2 c. @ 3 c.	...
Kentucky bagging.....	"	3 c. @ 4 c.	...
Book Stock.....	"	2 c. @ 3 c.	...
Newspaper Stock.....	"	1 c. @ 1 c.	...
Waste Paper and Scraps.....	"	1 c. @ 2 c.	...
Kentucky Bale Rope.....	"	4 c. @ 5 c.	...
Oakum, Junk, No. 2.....	"	4 c. @ 5 c.	...
" No. 2.....	"	3 c. @ 4 c.	...
Tarred Shaking.....	"	1 c. @ 1 c.	...
Grass Rope.....	"	2 c. @ 2 c.	...

## EXPORTS

Bremen.....	Quan. Value.	Mach'y. pkgs. 87 1,350	...
"	"	Coal, tons 135 65	...
Ag. imp., pkgs 28 2,610			
Agm. cs. 3 214			
Hdw. cs. 70 2,040			

## London.

Hdw. cs. ....	599 10.713		
Ag. imp., pkgs 309 1,782			
Steel, cs. .... 15 500			
Cge mts, pgs 5 525			
Mch'y. pkgs 20 500			
Hdw. cs. .... 9 2,000			
Arms, cs. 5 1,000			
Lead, pgs 4103 11,360			
Pumps, pkgs 4 220			
Hdw. cs. .... 3 90			

## Antwerp.

Cartridges, cs. 309 1,500			
Ag. imp., pkgs 3 150			
Arms, cs. 5 1,000			
Lead, pgs 4103 11,360			
Pumps, pkgs 4 220			
Hdw. cs. .... 3 90			

## Haiti.

Mf. iron, pkgs 128 470	R. R. mt., pgs. 610 2,400		
Hdw. cs. .... 4 178	Grindstones, 95 532		
Nails, kegs 30 80	Ag. imp., pkgs 3 140		
Mach'y. cs. .... 1 75	Hdw. cs. .... 150 1,800		

## China.

Sew. mach, cs. 1 73	Mf. iron, pkgs 115 834		
S't'nd w're, cs. 36 946	Pump, pkgs 3 90		
Ag. imp., pkgs 3 140	Mach'y. cs. .... 38 2,497		

## Dutch West Indies.

Hdw. cs. .... 89 872	Sew. mach, cs. 14 333		
	Cutlery, cs. .... 22 2,029		
Hdw. cs. .... 13 297			

## Hamburg.

Hdw. cs. .... 51 2,477	Mf. iron, pkgs 2 120		
Copper, cks. 139 29,649	Beltling, bls. 3 712		
Mach'y. cs. .... 11 1,782			

## United States of Colombia.

Office of The Iron Age, 220 South Fourth St.			
PHILADELPHIA, Aug. 6, 1878.			

## COAL.

The trade for the past week has been exceedingly dull. Probably less business has been done than in the corresponding week for many years. In many offices the only sales on some days have been those by mail, nothing being done in person. The dealers have a great variety of reasons to account for all this, and say that it is to be expected, &c., that there is still a stock of Coal on hand, that people are waiting for the combination to break and that the drawback circular of the Philadelphia and Reading Railroad has frightened people. Whatever the reason is, the public are shy of the Coal market and do not buy. The domestic demand has not yet begun, most housekeepers having laid in an unusually large supply, which is by no means exhausted. This makes the retail trade dull, and has its effect upon the general market. Ostensibly, the circular of the Philadelphia and Reading Company is intended to put individual operators in the Schuylkill upon the same footing as itself and enable them to compete in the New York market. Its effect, however, has been to shake faith in the combination and to make people believe that the quantity of Coal likely to come to this market is much larger than is necessary. Coal dealers, however, profess unbounded faith in the situation, especially the Lehigh men. This is quite natural, as all the Lehigh sizes are scarce, chestnut only excepted, and the market takes readily all that is offered at the market rates. What is the future of the trade will be is a matter beyond conjecture. Few men even among those best posted dare to express an opinion.

Bituminous Coals are to some extent held in check, and it is doubtful due to the low price of Cumberland that anthracite prices are kept down. Cumberland, although quoted at from \$4.20 @ \$4.35, can probably be obtained in New York by the cargo for less than \$4, and perhaps as low as \$3.80. As a steam Coal it is doubtless superior to anthracite in a great many cases. The softer Coals are feeling the anthracite depression, the two markets reacting upon each other.

## PHILADELPHIA.

General business continues dull, although in some quarters there are indications of improvement, which it is hoped may not only become permanent, but extend to other departments as well. A good deal of talk is being made in regard to a revival of business in the Delaware shipyards, but there is really little of importance beyond what has already been published in these columns. Contracts have just been signed for a couple of new steamships, and a good deal of work is going on in the way of repairs and improvements on old vessels; all of which, however, was referred to at length in *The Iron Age* of July 18. In locomotive building there has been a decided improvement as compared with last year, and the prospects are considered fairly encouraging. The capacity of the Baldwin Locomotive Works is set down at 500 locomotives yearly, and no doubt that number or more could be built there if the demand was so great. This year so far there have been constructed 170 engines and 30 others are being built. Of the latter three are for Australia, two for Cuba and one for Canada, the others having been contracted for by American companies. The total number of locomotives built at the works is set at 4500, and the number per year for the past 25 years is stated as follows, the figures for 1878 being estimated:

Hdws, pkgs. 3 402  
Pumps, pkgs. 10 657  
Ag. imp., pkgs 2 150  
Cars. 3 1,730  
Hdw. pkgs. 159 5,878  
Mach'y. pkgs. 1 1,261  
Iron safe. 1 100  
IRON.

Konigsberg.

Pumps, pkgs. 6 250			
Ag. imp., pkgs 5 472			
Hdw. pkgs. 6 145			

## Glasgow.

Ag. imp., pkgs 35 770	Mf. iron, pkgs 69 2,444		
Hdw. pkgs. 69 2,444	Sew. mach, cs. 15 881		
Nails, kegs 4 147	Cartridges, cs. 18 1,730		
Mf. iron, pkgs 100 100	Car wheels, cs. 20 2,175		
Mach'y. cs. 76 7,750	Ag. imp., pkgs 28 2,015		
Beltling, cs. 2 983	Hdw. cs. .... 128 1,765		

## Havre.

Mach'y. cs. .... 3 547	Cutlery, pkgs 105 3,198


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at this point have been inclined to manifest a trifle more firmness, and, upon the whole, are not disposed to make as large concessions upon jobbing lots to foundry men as could have been obtained a fortnight ago. The principal cause of the incipient improvement is the expected decrease of production by the blowing out of more furnaces, together with a slightly better inquiry for manufactured Iron. There have been sales of small lots of Pig in this market at \$19 @ \$20 for No. 1, \$18 @ \$19 for No. 2. Scotch Pig is quoted at \$24 @ \$25. Gray Forge is nominally quoted at \$17 @ \$18. A little more inquiry has been perceptible for Bar Iron in the Boston market. Parties have been looking around a little more than of late, and some fair-sized transactions have taken place upon the basis of our unchanged quotations of \$37.50 @ \$39 for Refined, and \$34 @ \$35 for Bolt. American Iron Rails are firm at \$32 @ \$35 at mill, and a few orders are being placed at these figures. Steel Rails are in good demand, but there are intimations of lower prices having been accepted in recent transactions. This is not on account of any scarcity of business, however, but more the result of competition on a special order. It is said that an Eastern concern offered to sell Rails to a Western road at \$42, at mill, but failed to secure the order, which is understood to have been divided between the North and South Chicago mills at something less than \$44 there, deliveries extending into 1880. This, however, is an exceptional transaction, and is no indication of the condition of the market further than that it shows a feeling of jealousy among sellers which may sometime result in another period of disastrous competition. In the mean time there is a good demand, and with large contracts already on hand there is no reason why prices should be reduced. At all events the market is in sellers' hands, but as they have on former occasions broken prices on themselves, there is no certainty that they will not do it again. We quote \$43 @ \$45 at mills, market steady. Nails continue very dull at unchanged prices. Sheet is selling at \$3 @ \$3.50 per lb. Russia is quiet at 10 1/2 @ \$11. We quote English Spring Steel at 7 1/2 @ \$8, gold; 9 1/2 @ \$11 for German; 9 1/2 @ \$11 for Machinery; 14 1/2 @ \$15 for Cast; 10 1/2 @ \$12 for Blister; 8 1/2 for American Spring; 13 1/2 @ \$14 for Cast; 9 1/2 for Blister; and 8 1/2 for Machinery. In Plate Iron the only activity in this market is in Tank, which is selling steadily at 2 1/2. Boiler Plate is very dull, quoting 2 1/2 for No. 1 Charcoal, 2 1/2 for No. 1 Shell, and 2 1/2 for Flange. Copper continues very dull, and sells in a small way at 16 1/2 for Ingots, with rumors of still lower prices. For manufacturers we quote: New Sheathing, 24 1/2 @ 26 1/2. The outside price rules in small transactions; but large buyers are purchasing at the inside figure. Bolts are quoted at 26 1/2 @ 28 1/2. Yellow Metal Sheathing continues very weak, quoting 13 1/2 for English and 15 1/2 for American; Yellow Metal Bolts, 18 1/2 @ 20 1/2. Lead continues quiet and weak. The Boston Water Board has awarded the contract for supplying 30 tons of Pig Lead to the Boston Lead Company for \$3.40 per 100 lb. The lowest bid for Pig Lead was \$3.40 per cwt. and the highest \$3.55. For Lead Pipe the lowest bid was \$3.48 per cwt. and the highest \$3.70. On account of two similar bids no contract was awarded for Pipe. We quote: Pig, 3 1/2 @ 3 1/2¢, currency; Sheet, 6¢; Pipe, 5¢; Tin-Lined Pipe, 12¢; Bar Lead, 5¢; all of these excepting Pig are subject to the usual trade or 10% discount. Antimony is dull and unchanged, with sales of Boston spot lots at 11 1/2 @ 11 1/2¢. Spelter continues firm, and prices tend upward, with little disposition on the part of buyers to sell on the spot at less than 5¢ for 10-ton lots. Tin continues dull and drooping, and Straits continue to weaken. We quote: Straits, 11 1/2 @ 11 1/2¢; Banca, 17 1/2 @ 17 1/2¢; Refined English, 14 1/2 @ 14 1/2¢, gold. We quote Plate: Charcoal, 1. C. \$6 @ \$6.25; Coke, \$5.12 1/2 @ \$5.25; and Terne, \$5.25 @ \$5.50, gold. —Commercial Bulletin.

### CINCINNATI.

Messrs. E. L. HARPER & Co. (successors to Messrs. L. R. HULL & Co.), under date of Aug. 3, write us as follows: No material change in the condition of the market has been developed since our last report. Prices remain unchanged, and the demand, which has been moderate, shows more activity at the close. Stocks are certainly not increasing, and the best grades especially are not in such supply, but what the expected improvement in demand this fall, and the increased firmness on the part of sellers which would probably result from it, might together readily produce reasonable advance. That prices have now touched bottom is apparently generally believed, and this of itself is a long step toward an improvement in the trade.

### HOT-BLAST FOUNDRY.

Hanging Rock C. C., No. 1.....\$1.50 @ 22.00  
C. C. No. 2.....20.00 @ 20.50  
Alice, No. 1, Extra, I. M.....21.00 @ 21.00  
" No. 1, N. O.....19.50 @ 21.00  
Hanging Rock Coke and S. C. No. 1.....19.00 @ 21.50  
" S. C. No. 2.....18.50 @ 17.00  
Virginia Coke, No. 1.....19.00 @ 20.00  
" No. 2.....17.00 @ 17.50  
Shawnee S. C. No. 1.....19.00 @ 19.50  
" S. C. No. 2.....18.50 @ 17.00  
Hocking Valley S. C. No. 1.....18.50 @ 19.00  
" S. C. No. 2.....18.00 @ 17.00

### FORGE IRONS.

Hanging Rock, No. 1 C.....19.00 @ 19.50  
Hanging Rock, No. 1 Coke.....18.50 @ 17.00  
Dundale, No. 1 Coke.....17.00 @ 16.50  
Alo. and Tenn. No. C.....18.00 @ 16.00  
Red-short, No. 1 Coke.....18.50 @ 19.50  
Cold-short, No. 1 Old Rail, prime.....15.50 @ 16.00  
Old Rail, prime.....cash, 18.00 @ 19.00

### CAR WHEEL AND MALLEABLE.

Hanging Rock C. B.....31.00 @ 33.00  
Cherokee C. B.....30.00 @ 30.00  
Southern and Western Brands.....28.00 @ 30.00

### LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date of Aug. 5, write us as follows: There is more inquiry for Iron, but the wide difference in the views of buyers and sellers has prevented any considerable increase in sales. Consumers have still expected further concessions on each purchase, but the needy holders are pretty well sold out, and furnace-men are either holding firm at last month's prices or asking some advance. Which will ultimately yield is uncertain, but the state of affairs noted looks favorable to the pro-

ducers, as we have not seen so much firmness on their part for a long time. The usual time, 4 months, allowed on quotations below:

FOUNDRY IRONS.	
No. 1 Hanging Rock, Charcoal	\$20.00 @ 21.00
No. 2 "	18.00 @ 19.00
No. 1 Southern, Charcoal	18.00 @ 19.00
No. 2 "	16.00 @ 17.00
No. 1 Hanging Rock, Stonecoal and Coke	19.00 @ 20.00
No. 2 " Hanging Rock, Stonecoal and Coke	17.00 @ 18.00
No. 1 Southern, Stonecoal and Coke	17.00 @ 18.00
No. 2 "	16.00 @ 17.00
" American Scotch	17.00 @ 19.00
Silver Gray	15.00 @ 17.00

MILL IRONS.	
No. 1 Charcoal, Cold-short and Neut'l.	16.00 @ 16.50
No. 1 Stonecoal, Cold-short and Neutral	16.00 @ 16.50
No. 2 Stonecoal and Coke, Cold-short and Neutral	15.50 @ 16.00
No. 2 Missouri and Indiana Red-short, White and Mottled, Cold-short and Neutral	20.00 @ 21.00

CAR WHEEL AND MALLEABLE IRONS.	
Hanging Rock, Cold-blast	28.00 @ 30.00
Alabama and Georgia, Cold-blast	26.00 @ 28.00
Kentucky, Cold-blast	24.00 @ 26.00

Messrs. W. B. BELKNAP & Co., Iron and Steel merchants, Louisville, Ky., under date of Aug. 5, report a fair miscellaneous trade for the season. The indications continue good for an excellent fall business. The presence of the yellow fever on the Gulf coast, and stringent quarantine regulations, will go far, however, to diminish and retard transactions with the extreme South. Prices are very firm, except for Nails, and mills everywhere are beginning to manifest an unprecedented amount of back-bone. No special change to note.

### RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, Richmond, Va., writes as follows under date of Aug. 5: I can report a more active market for Pig Iron and Old Rails. Sales of considerable importance have been made on the basis of the following quotations:

American Scotch Pig Iron	\$22.00 @ 23.00
Anthracite, No. 1	19.00 @ 20.00
" No. 2	18.00 @ 19.00
" No. 3	17.00 @ 18.00
" Mottled	14.50 @ 15.50
Coke, No. 1	19.00 @ 20.00
" No. 2	18.00 @ 19.00
" No. 3	16.50 @ 17.50
Va. Cold-blast Charcoal, Cold-short	20.50 @ 23.00
" Neutral	27.00 @ 29.00
Va. Warm-blast " Cold-short	18.00 @ 21.00
Old Rails	16.00 @ 17.00
Wrought Scrap No. 1	17.00 @ 18.00
Cast " (machinery)	17.00 @ 18.00
Richmond Refined Bar Iron	20 @ 20
Horse Shoes per kg	4.25 @ 4.50
Old Dominion Nails, Standard Size, \$ per kg	2.40 @ ...
Freights to Philadelphia, \$1.40 per ton of 2240 lb., by sail	
Freights to New York, \$1.60 per ton of 2240 lb., by sail	

### BALTIMORE.

Mr. W. N. WYETH, Iron and Steel Merchant, 46 and 48 South Charles street, reports us the following prices, under date of Aug. 5: Trade rules about the same as last reported, and prices continue firm and unchanged, with the exception of Horse and Mule Shoes, which have advanced 25 cents per kg. Refined Bar Iron, 1 to 6 wide by 3/4 to 1 thick, \$1.85 @ 2 @ 2. Freined Bar Iron, 1 to 4 1/2 wide by 1 1/2 to 2 thick, " 1.85 @ 2 @ 2. Round and Square, 1 1/2 wide and 1 1/2 thick, " 1.85 @ 2 @ 2. Hoop iron, 1 1/2 wide and 1 1/2 thick, " 2 1/2 @ 2 1/2. Band Iron, from 1 1/2 to 4 in. wide, " 2 1/2 @ 2 1/2. Horse-shoe Iron, " 3 @ 3 1/2¢. Norway Nail Rods, " 4 1/2 @ 5 1/2¢. Black Diamond Cast Steel, Plates, Squares and Octagons, ordinary sizes, " 13 @ 14 ¢. Machinery Steel, " 8 @ 10 ¢. Cast Spring Steel, " 6 @ 6 1/2¢. Common Horse Nails, " 7 @ 7 1/2¢. R. R. Spikes, 5 1/2 x 16, " 2 1/2 @ 2 1/2¢. Perkins Horse shoes, \$ per kg of 100 lbs., " 4.62 1/2 ¢. Mule shoes, " 10 9 8 7 6. Putnam Horse Nails, " 10 18 19 20 21 23¢. Globe Horse Nails, " 10 18 19 20 21 23¢. Less discount to the trade.

Messrs. R. C. HOFFMAN & Co., Iron and Commission Merchants, No. 23 South Frederick street, report the Pig Iron market as follows, under date of Aug. 5: Below we quote you present prices of Pig Iron and Blooms, with light demand.

Baltimore Charcoal Pig	\$26.00 @ 28.00
Virginia "	26.00 @ 28.00
Anthraco. No. 1	23.00 @ 25.00
" No. 2	21.00 @ 23.00
" No. 3	18.00 @ 19.00
" Mottled and White	13.00 @ 14.00
Charcoal, C. B. Blooms	50.00 @ 52.00
" Billets	53.00 @ 55.00
Refined Blooms	43.00 @ 45.00

### FOREIGN.

#### FRANCE.

(Moniteur des Intérêts Matériels.)

Paris, July 21, 1878.—Metals.—The custom house statistics have just been published. The imports into France during the six months show an excess of about 310,000,000 francs over the corresponding period of 1877, and the exports a decrease of about 110,000,000 francs. In some manufacturing districts greater activity is observable, but business in general is not brisk. A month will probably have to pass ere much of an improvement can be expected. In the iron region at first there was a bad impression, but not much improvement is attached to them now. Copper. The market has been very quiet here, and a partial decline of 2 1/2 francs has taken place. We quote first brands, Chilli Bars, deliverable at Havre, 160 francs the 100 kilos; Common ditto, 160; Ingots and Slabs, 170; Best Selected, 175; and pure Corocoro Ore, 175. Havre quotes best brands Chilli Bars, 167.50 @ 187.50. Paris conditions: good current ditto, 160; and Urmel, 160. Marseilles is quiet and unchanged, as follows: Spelter in slabs, 160; Red Tokat, 155; small Refined Ingots, 17 @ 18. Sheathing, 100; Bolts, 105; and Yellow Metal Sheathing, 187.50. This has been quiet here with a downward tendency. We quote Banca, 177.50 francs the 100 kilos; Billiton, 167.50; Straits, 160; and Australian, 166.25, all deliverable at Havre or Paris, and English at Havre or Rouen, 165. At Marseilles a limited business is reported. They quote Straits, 165; Banca, 180; and English Lead. The market is in a languishing condition here, but without change. We quote the various sorts deliverable at Havre, 43, and at Paris, 43.50. First Fusion, soft Spanish, has been selling at Havre at 42 francs the 100 kilos. No change is advised from Marseilles. They quote First Fusion Soft, 40 @ 40.50; Second Fusion, 39; Argentiferous, 41 @ 41.50; Sheet and Tops, 38; and Shot, 43. Spelter.—Block Zinc is firm. Sheet ditto is declining. We quote Silesian at Havre, 47.50 francs the 100 kilos, and at Paris, 50. Vieille Montagne Sheet has been reduced to 50 @ 50. Silesian is quoted at Havre, 47.50. Marseilles is weak; they quote Sheet Zinc, 58 @ 60, less 3%; and Old Remelted, 44. Iron.—The Anzin strikes have cast a gloom over the entire situation. Although we believe they will be short lived, and that the destruction of property on a large scale

will be prevented by the intervention of the military, they give room for reflection; and in view of these disturbances and the possibility of other similar ones occurring elsewhere in France people will absent themselves from all engagements abroad, and the dull feeling to which we have alluded in previous reviews is deepened. The wages insisted upon are 5 francs per day and a reduction of working hours to eight. The Anzin Company, it would seem, was unable to renew its contract for Coal in brick form with the Northern Railroad of France, and was therefore compelled to discharge temporarily 2000 men. This started the difficulty, the men being determined to strike a disturbance, and they succeeded in seducing those that remained in employ into raising their demands. Coal, in consequence of these troubles, has also been less dealt in, and a week or a fortnight will elapse ere everything is settled and business returns to a normal condition in the Coal and Iron regions of the republic. At all events, we have had a timely warning that we shall have to be prepared for labor trouble from now forward.

### BELGIUM.

(Revue Universelle.)

BRUSSELS, July 21, 1878.—Iron.—There has been no improvement in the general situation, nor do masters appear to consider the did previous week. There is a steady inflowing of orders. This is somewhat, at least; they are small ones, it is true, but then the times are dull, and on large bargains the competition from abroad is great. The conclusion of peace in the East can hardly fail to bring us Belgians some business. Several agents from Roumania are traveling in Belgium for the purpose of obtaining the representation of Belgian Ironmasters in that locality. The Belgian government will receive visitors from several powers, and may even send a delegation to the 4th International Congress of Labor, which is to be held in Brussels in October. Some base work is to be done also for the State, which will come up Aug. 1. Coal.—The situation is becoming more difficult daily. A good many Coal miners in Belgium perceive that their stocks accumulate fast, and that there

## Colorado as a Place to Settle in.

A correspondent writing from South Park, Colorado, says:

Business throughout the Centennial State is and has been exceedingly slow for the past five or six months, but there is strong prospect of a revival in the near future. The business of the State is principally stock and mining, but in the cities and towns some extensive mercantile houses drive a large, and I dare say a lucrative business. There is certainly a sad mistake made by many in coming to the West to better their condition financially. Already the country is overrun with men and women out of employment, and still they come. To settle in the West a man needs considerable grit and sinew, besides money sufficient to (as they term it here) grub him while prospecting for a permanent settlement. Without money in this country a man has but one of two expedients to choose from—work upon a farming ranche, or the life of a herder upon a cow or sheep ranche, or a return trip to the East, where there is, I believe, more work in a day than there is here in a week.

The mines of Leadville, Boulder, San Juan, Georgetown, Breckenridge, Hamilton,

Golden and others are the greatest attraction to new comers. They flock to them, and in many cases succeed in finding that which we are now so eager to handle, "the filthy lucre." Wages in a new mining camp are in proportion to the price of provisions, \$3 and \$4 per day, while flour is worth often as high as \$15 to \$20 per cwt. Leadville is the attraction now, and some very rich leads have been found, one of which I know where the finder sunk his shaft but three feet and refused \$20,000 for a one-third interest. Several partially developed mines have been sold for from \$25,000 to \$75,000. Flood and O'Brien, of California and Nevada, through their agents, gobble up everything in the shape of a mine they can buy, and I would not be surprised to hear of them yet controlling the entire camp.

To those who think of coming to Colorado a word of advice from one who has seen it and yet sees it every day. If you have money, come. If you have not, stay where you are till you get some, and then make your start in the spring, being prepared to rough it from the start. You cannot live on air nor scenery, and it takes money to get anything else. This is the place for thousands yet, but there is not labor for

all for wages, but you can prospect for yourself to your heart's content for gold, and will find thousands of acres of farming land waiting for you to break soil and irrigate. The rainfall is far from being sufficient to water the crops, and by irrigating under you can make your crops yield as you desire.

Last year's revenue of the German Central Exchequer was 15,000,000 marks below the estimate. All branches of the customs and excise suffered from the continued depression of trade. The deficit is covered by savings from the French indemnity. The forthcoming meeting at Heidelberg of the finance ministers of the several German states is intended to pave the way for an increase of revenue. The discussions will cover the subject of excise and kindred topics. Herr Hobrecht, the Prussian Minister of Finance, is said to have devised a plan for a rapid increase of indirect taxation.

The Maryland and Delaware Railroad will hereafter be known as the "Delaware and Chesapeake."

## THE LANGDON MITRE BOX COMPANY,

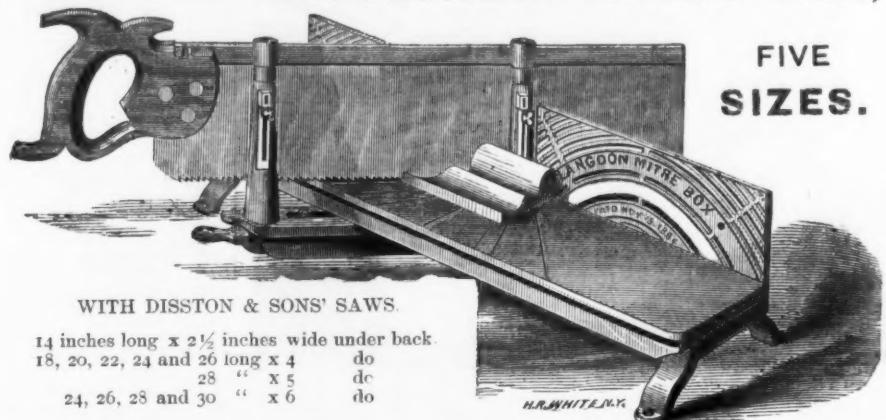
Millers



Falls, Mass.,

Sole Owners and Manufacturers of the

## LANGDON ADJUSTABLE MITRE BOX,



WITH DISSTON &amp; SONS' SAWS.

14 inches long x 2½ inches wide under back.  
18, 20, 22, 24 and 26 long x 4 do  
28 " x 5 do  
24, 26, 28 and 30 " x 6 do

FIVE  
SIZES.

Five sizes of Mitre Boxes. Eleven sizes of Saws. Dealers wishing to advertise furnished with electrotypes without cost.

Illustrated circulars  
All parts of each size made to interchange.  
(issue 1877) sent when desired.

## JESSOP'S Patent Adjustable Pipe Tongs.

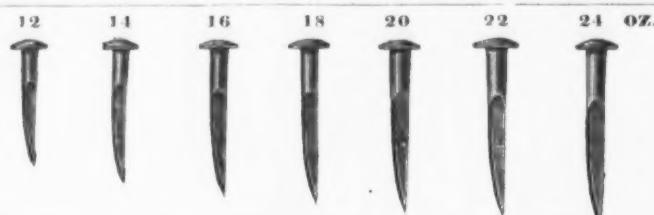


THE BEST IN THE MARKET.

Send for Samples.

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Sole Manufacturers.

58 John Street, New York.



## TACKS.



### Swedes Iron, Upholsterers', Gimp & Cut Tacks.

TINNED, LEATHERED AND LARGE HEAD IRON CARPET TACKS.

Trunk, Clout and Finishing Nails, Brads, Patent Brads, &c.

Lining, Saddle and Tufting Nails, Coffin Tacks and Tufting Buttons.

COPPER, ZINC, STEEL, AND SWEDES AND COMMON IRON SHOE NAILS, &c.

Copper, Iron and Galvanized Boat Nails (Regular or Chisel Pointed), Brass and Iron

Wire Nails, Moulding Nails and Escutcheon Pins, Chair and Cigar Box

Nails, 2d & 3d Fine Nails, Roofing Tacks and Nails, &c., &c.

Made by the AMERICAN TACK CO., Fairhaven, Mass.

A full line of goods may be found at the

NEW YORK SALESROOM, No. 117 Chambers Street.

### THE CONNECTICUT VALLEY MFG. CO.,

CENTERBROOK, CONN., Manufacturers of

Lewis' Patent Single Twist Spur Bits,



### GERMAN CIMLET BITS, etc.

TRADE

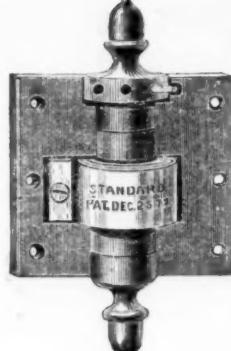
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MARK

## MASON MANUFACTURING COMPANY.

Manufacturers of

### Standard Patent Spring Hinge.



#### PRICES.

#### Single-Acting,

Per pair.

2x2.....	\$ .75
2½x3½.....	1.00
3x3.....	1.50
4x4.....	2.00
5x5.....	3.00
6x6.....	4.00

Discount to the Trade.



Manufacturers of

### Perfection Step Ladder.

#### PRICES.

3 feet.....

4.....

5.....

6.....

7.....

8.....

9.....

10.....

Discount to the Trade.

Discount to the Trade.

Manufacturers of

### Standard Patent Spring Hinge.

#### PRICES.

Double-Acting.

Per pair.

2½x2½.....

3x3.....

4x4.....

5x5.....

6x6.....

7x7.....

Discount to the Trade.

Discount to the Trade.

OFFICE: 116 Chambers St., New York.

Patented April 23, 1878.

Liberal discount to the trade.

### MAGIC JACK CO.

Sole Manufacturers and Proprietors,

MISHAWAKA, IND.

Sargent & Co.,  
Agents.

C. C. HARLOW & CO.,  
BRIDGEWATER, MASS.

Manufacturers of DAMAN STANDARD HOLLOW AUGERS.—Universally acknowledged superior to any other in the market. They have recently been improved, making them, as now offered to the trade, the "most perfect tools of their kind, either in design, material, or workmanship." Solid DADO PLANE.—Made of solid cast steel and of gun metal. METALLIC COMBINATION PLANE.—Made of solid cast steel and of gun metal. Of an entirely new design. Can be used as Groover, Dado and Rabbet Plane, in any direction of the grain, and also as a Match Plane. COLD SPRING.—Can be used as a Door Spring or made Lead Pipe CUTTERS.—To cut lead pipe in any position and without chips or burrs. Please send for circulars and prices.

## McNab & Harlin Mfg. Co., MANUFACTURERS OF BRASS COCKS AND VALVES For STEAM, WATER and GAS.

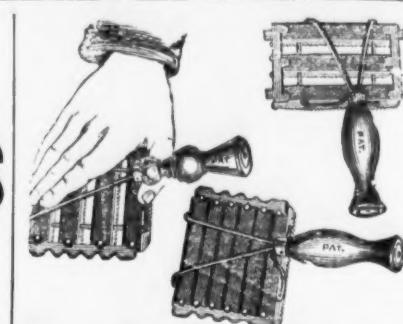
Iron Pipe and Fittings, Plain and Galvanized.

### PLUMBERS' MATERIALS.

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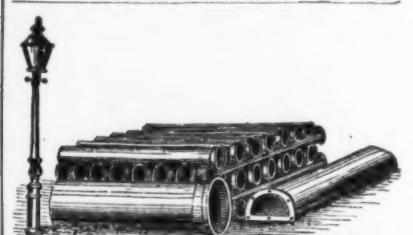
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We call your attention specially to our new patent endless wire frame comb. The result of a long series of experiments, made with a view to meeting all the requirements of a good comb, better, stronger, and more durable than any ever before made. The wire shank gives what has never before been attained, viz.: a rest and brace for the thumb, in such a position that the hand cannot come in contact with the horse while the comb is being used. The bristles run from the shank over the neck to the front teeth giving strength and durability in a direction never heretofore attained, and at the same time serve as an extra handle; and when the fingers are interlocked with the raised shank the comb is more firmly held, and less likely to be held, and with much less fatigue to the hand than is possible in any other formation—in short, it needs a trial to vindicate its name: The Perfect Comb.

THE LAWRENCE COMB CO.  
Factory and Office,  
382 2d Ave., cor. 22d St., N. Y.

WM. S. CARR & CO.  
Sole Manufacturers of  
CARR'S PATENT  
Water Closets,  
PUMPS, CABINET WOOD WORK, &c.,  
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Philadelphia,  
Manufacturers of

Cast Iron Pipe  
FOR WATER AND GAS.  
Lamp Posts, Valves, &c.,  
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400 CHESTNUT STREET.

NEWCOMB BROS.,  
Manufacturers of

586 Water St., N. Y.  
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I invite special attention to my  
PATENT  
Reversible  
Nozzle.

These Bellows are well adapted and put up for export trade.  
I manufacture all sizes, with or without this improvement.

NEW YORK and BOSTON  
Pattern  
STORE TRUCKS.

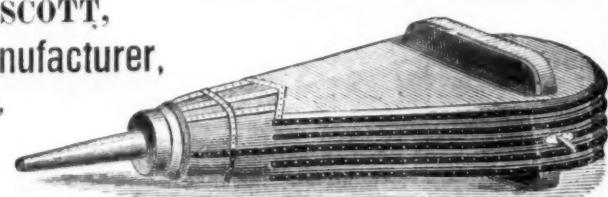
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H. N. HUBBARD,  
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Reduced prices. Catalogues furnished.

CHAMPION ELASTIC EXPANSION RUBBER BUCKET FOR CHAIN PUMPS  
PATENTED AUG. 1ST, 1876.  
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CANTON OHIO.  
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Daman  
STANDARD  
HOLLOW AUGERS.





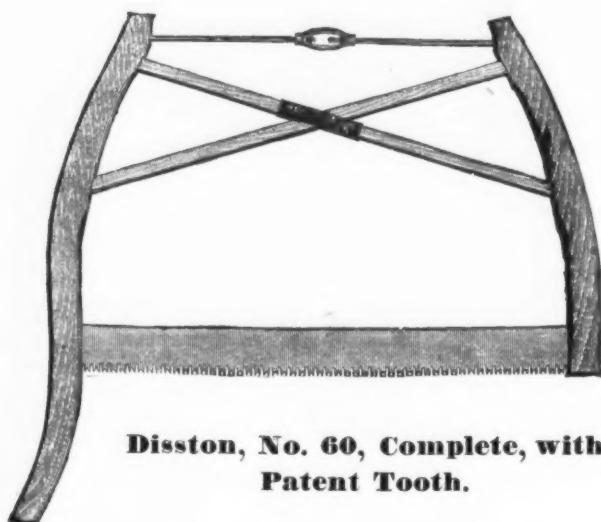
# HENRY DISSTON & SONS

## Keystone Saw, Tool, Steel & File Works.

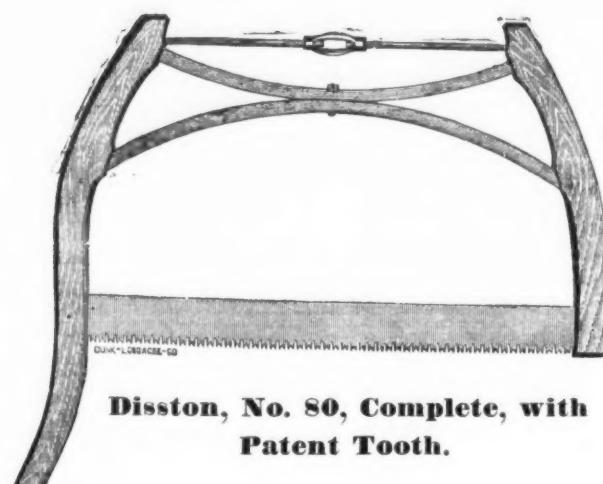
FRONT AND LAUREL STREETS, PHILADELPHIA.

Branch Works, Tacony, Philadelphia.

Branch House, Randolph & Market Streets, Chicago, Ill.



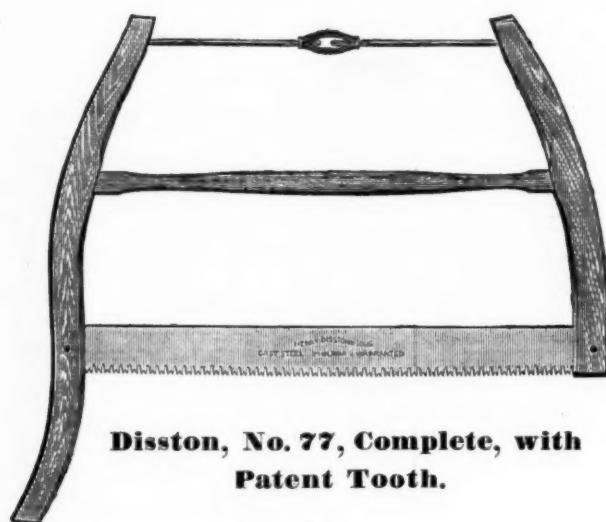
**Disston, No. 60, Complete, with Patent Tooth.**



**Disston, No. 80, Complete, with Patent Tooth.**



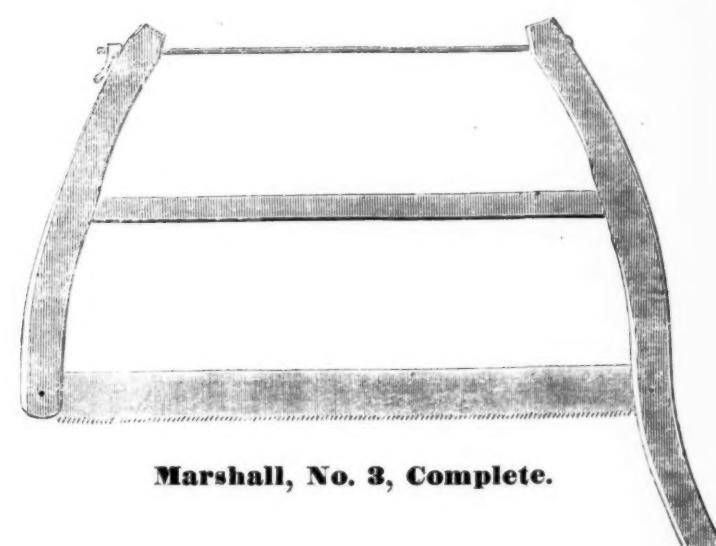
**Disston, No. 70, Complete, with Patent Tooth.**



**Disston, No. 77, Complete, with Patent Tooth.**



**Disston, No. 6, Complete, with Straight or Swivel Rod.**



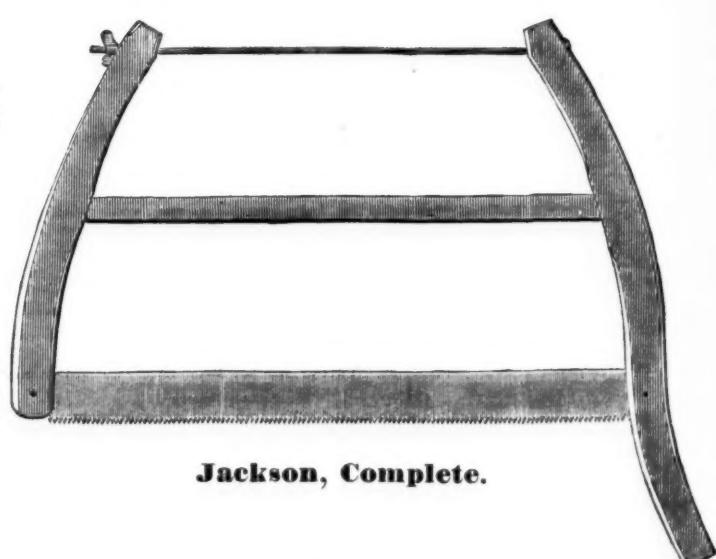
**Marshall, No. 3, Complete.**



**No. 6, Wood Saw Blade.**



**No. B., Marshall Wood Saw Blade.**



**Jackson, Complete.**



**No. 77, Wood Saw Blade.**



**Jackson Wood Saw Blade.**

## TO THE TRADE.

The above cuts represent some of our various styles of Wood Saws and Frames.

All Saws marked Disston are fully warranted, and if found defective will be exchanged for new ones.

Every article manufactured by our house is guaranteed to be as represented.

In ordering, be sure that the goods are made by Henry Disston & Sons, as some parties are copying our numbers and marks.

## New York Wholesale Prices, August 7, 1878.

## HARDWARE.

A	nvil.	
American		\$ 150—dis 20%
Right's.	goud	1040 over 250
Brigade's Mouse Hole.	gold	640 to 1000
Trenton.	gold	640 to 1000
Caste Anvils (American).	gold	1040 currency
Apple Papers, &c.		\$ 100 to 120
Table.		\$ 100 to 120
Lightning.		\$ 100 to 120
Bay State.		\$ 100 to 120
Reading.		\$ 100 to 120
"		\$ 100 to 120
"		\$ 100 to 120
"		\$ 100 to 120
Climax Corer and Slicer.		\$ 100 to 120
Augers and Bits.		\$ 100 to 120
Corn Valley Mfg. Co.		\$ 100 to 120
Douglas Mfg. Co.		\$ 100 to 120
Ives.		\$ 100 to 120
Beecher (French, Swift & Co.).		\$ 100 to 120
Griswold.		\$ 100 to 120
Nobles Mfg. Co.		\$ 100 to 120
Kason's Patent.		\$ 100 to 120
Cook's Ives.		\$ 100 to 120
Snell Mfg. Co.		\$ 100 to 120
Jennings' Bits.		\$ 100 to 120
Imitation Jennings' Bits.		\$ 100 to 120
Ives' Jen Rings' Bits.		\$ 100 to 120
Lewis' Single Twist Bits.		\$ 100 to 120
Andrews' Bits.		\$ 100 to 120
Griswold's Patent Bits.		\$ 100 to 120
Expansive Bits.	Clark's, small	\$ 100 to 120
"	large	\$ 100 to 120
"	ives	\$ 100 to 120
"	Blake's	\$ 100 to 120
"	Parmelee's	\$ 100 to 120
Hollow Augers	Ives'	\$ 100 to 120
Double Cut Gimlet Bits.	French Swift & Co.	\$ 100 to 120
"	Bonney's Adjust.	\$ 100 to 120
"	Lyman's.	\$ 100 to 120
"	Stearns' Adjust.	\$ 100 to 120
No. 5, Iron Handle.	Universal Expansive	\$ 100 to 120
Gimlet Bits.	Diamond	\$ 100 to 120
"	Bee	\$ 100 to 120
Double Cut Gimlet Bits.	Shepardson's.	\$ 100 to 120
"	Ct. Valley Mfg. Co.	\$ 100 to 120
"	Hartwell's.	\$ 100 to 120
"	Douglas'.	\$ 100 to 120
"	Ives'	\$ 100 to 120
Morse's Bit Stock Drill, List of May 15, '78.		\$ 100 to 120
L'Hommedieu's Ship Augers.		\$ 100 to 120
Watrous Ship Augers.		\$ 100 to 120
Awl Heads.		\$ 100 to 120
Sewing, Braze Ferrule.		\$ 100 to 120
"	350	\$ 100 to 120
Pent Sewing, Short.		\$ 100 to 120
"	Long.	\$ 100 to 120
"	Peg, Plain Top.	\$ 100 to 120
"	Leather Top.	\$ 100 to 120
Awls, Brad Sets, &c.		\$ 100 to 120
Awls Sewing, Common.		\$ 100 to 120
"	Sewing, Best.	\$ 100 to 120
"	Shouldered Peg.	\$ 100 to 120
"	Patent Peg.	\$ 100 to 120
"	Shouldered Brad.	\$ 100 to 120
"	Handled.	\$ 100 to 120
"	Handled Scratches.	\$ 100 to 120
"	Socket Scratches.	\$ 100 to 120
Brad Sets, Alken's.		\$ 100 to 120
No. 42, \$10.50; No. 43, \$12.50.		\$ 100 to 120
"	Stanley's Excelsior No. 1, \$11.00.	\$ 100 to 120
Axes.		\$ 100 to 120
Common (Guy C. Hotchkiss, Field & Co.).		\$ 100 to 120
Solid Collar, Case Hardened, Chilled Box.		\$ 100 to 120
Axle Grease.—Frazer's.		\$ 100 to 120
Balances.	All Spring Balances, List July 25.	\$ 100 to 120
Bed Keys.—Gray's Ratchet.		\$ 100 to 120
Bells.		\$ 100 to 120
Hand Light Brass.		\$ 100 to 120
" Extra Heavy.		\$ 100 to 120
" White Metal.		\$ 100 to 120
" Silver Chime.		\$ 100 to 120
" Swiss.		\$ 100 to 120
" Globe (Come's Patent).		\$ 100 to 120
Gong, Abbe's.		\$ 100 to 120
Yankee.		\$ 100 to 120
Sarton's.		\$ 100 to 120
Cranks, &c.		\$ 100 to 120
" Brook's.		\$ 100 to 120
" Connel's.		\$ 100 to 120
Lever, Sargent's.		\$ 100 to 120
" Taylor's Bronze or Plated Lever.		\$ 100 to 120
" Japanned Lever.		\$ 100 to 120
" Hart, Bliven & Mead Mfg. Co.		\$ 100 to 120
Full.		\$ 100 to 120
" Brook's.		\$ 100 to 120
" Western.		\$ 100 to 120
Call.		\$ 100 to 120
Cow, Common Wrought.		\$ 100 to 120
" Sargent's.		\$ 100 to 120
" Kentucky "Star".		\$ 100 to 120
" Sargent's.		\$ 100 to 120
Dodge's Genuine Kentucky, new list— Nos. 1 1 1/2 2 3 4 5 6 Hog.		\$ 100 to 120
82-100, 100, 900, 800, 600, 500, 350, 250, 500, 1000, 900, 800, 600, 500, 350, 250, 500, 1000, 900, 800, 600, 500, 350, 250, 500.		\$ 100 to 120
Star's Genuine.		\$ 100 to 120
Texas.		\$ 100 to 120
Bellows.		\$ 100 to 120
Blacksmiths, Common.		\$ 100 to 120
" Extra and Pittsburgh Pattern.		\$ 100 to 120
Moulders.		\$ 100 to 120
Hand Bellows.		\$ 100 to 120
Blind Adjusters.—Domestic.		\$ 100 to 120
Blind Fasteners.—Mackrell's.		\$ 100 to 120
Van Sand's.		\$ 100 to 120
" old pattern.		\$ 100 to 120
" gross.		\$ 100 to 120
Merriman's.		\$ 100 to 120
Bind Staples.		\$ 100 to 120
Boardman's Patents.	1/4 in. and larger.	\$ 100 to 120
Brook's.		\$ 100 to 120
Cast Iron Barrel, Shutter, &c.		\$ 100 to 120
Cast Iron Chain (Sargent's list).		\$ 100 to 120
Bush's Lever.		\$ 100 to 120
Wrought Iron Barrel.		\$ 100 to 120
" Square.		\$ 100 to 120
" Shutter (Stanley's list).		\$ 100 to 120
" Sargent's list.		\$ 100 to 120
Sunk Flus, Sargent's.		\$ 100 to 120
" Stanley's.		\$ 100 to 120
B.K. Flush, Comin & Stanley's.		\$ 100 to 120
" Ex. Heavy.		\$ 100 to 120
Plated Knob & Side Plate.		\$ 100 to 120
Carriage and Tire, Common.		\$ 100 to 120
" B. & W. & W. (old list).		\$ 100 to 120
Philadelphia.		\$ 100 to 120
Coleman.		\$ 100 to 120
" Sheldon's.		\$ 100 to 120
Tire, Am. Screw Co.		\$ 100 to 120
Star's.		\$ 100 to 120
Union Nut Co.		\$ 100 to 120
R. B. & W.		\$ 100 to 120
Union Nut Co.		\$ 100 to 120
Plow.		\$ 100 to 120
Machine.		\$ 100 to 120
Bolt Ends.		\$ 100 to 120
Bolt and Rivet Clippers—Chambers.		\$ 100 to 120
Borax.		\$ 100 to 120
Boring Machines.	Upright, Angular.	\$ 100 to 120
First quality, no Augers.	\$ 100 to 120	\$ 100 to 120
With Augers.	11,000.	11,000
Second quality, no Augers.	2,250.	net
With Augers.	4,000.	net
Snells, no Augers.	4,75.	25% net
Phillips' with Augers.	4,75.	25% net
Bow Pins.		10,000.
Union Nut Co.		\$ 100 to 120
Hotchkiss.		\$ 100 to 120
Humason, Beckley & Co.'s.		\$ 100 to 120
Sargent's.		\$ 100 to 120
Brackets.—Self (Sargent's).		\$ 100 to 120
Stag's.		\$ 100 to 120
Bull Ring—Union Nut Co.		\$ 100 to 120
Hotchkiss.		\$ 100 to 120
Humason, Beckley & Co.		\$ 100 to 120
Butts.		\$ 100 to 120
Wrought Brass.		\$ 100 to 120
Cast Brass, Tiedous.		\$ 100 to 120
" Corbin's.		\$ 100 to 120
COMMON CAST, NO. DRILLED.		\$ 100 to 120
Fast Joint, Narrow.		\$ 100 to 120
" Broad.		\$ 100 to 120
Loose Joint, Narrow and Broad.		\$ 100 to 120
Parliament Butts.		\$ 100 to 120
Mayer's Hinges.		\$ 100 to 120
Loose Joint.	Japanned.	\$ 100 to 120 @ 75 %
" with Acorns.		\$ 100 to 120
Parliament Butts.		\$ 100 to 120
Mayer's Hinges.		\$ 100 to 120
Loose Pin, no acorn.		\$ 100 to 120
" Acorns.		\$ 100 to 120
Japanned.		\$ 100 to 120
Plated Tips.		\$ 100 to 120
Union Mfg. Co.'s Fancy Butt.		\$ 100 to 120
figured Enamelled Loose Joint.		\$ 100 to 120
Wrought Iron.		\$ 100 to 120
Self-Feeding.		\$ 100 to 120
Breast, P. S. & W.		\$ 100 to 120
Hotchkiss.		\$ 100 to 120
Wilson's Tails.		\$ 100 to 120
Miler's Tails.		\$ 100 to 120
Ratchet, Marc's.		\$ 100 to 120
" Ingolds' (old list).		\$ 100 to 120
Whitney's.		\$ 100 to 120
Weston's.		\$ 100 to 120
Moore's Triple Action.		\$ 100 to 120
Whitney's Hand Drill.		\$ 100 to 120
Wilson's Drill Stocks.		\$ 100 to 120
Automatic Boring Tools.		\$ 100 to 120
DRILL CHUCKS.—Morse's Beach Patent.		\$ 100 to 120
Adjust.		\$ 100 to 120
Danbury.		\$ 100 to 120
ENG BEATERS.		\$ 100 to 120
Dover.		\$ 100 to 120
Family.		\$ 100 to 120
Elevator Buckets.		\$ 100 to 120
Mill E. Buckets, light, 3/4 to 10 in., (Duc's Improved).		\$ 100 to 120
Mill E. Buckets, heavy, 4 to 10 inches, (Duc's Improved).		\$ 100 to 120
Storehouse, (Duc's Patent) 12 to 17.		\$ 100 to 120
EMERY.		\$ 100 to 120
Genuine Chester—Regular Nos.		\$ 100 to 120
" Flour and FF.		\$ 100 to 120
Washington Mills—Regular Nos.		\$ 100 to 120
Bradley's.		\$ 100 to 120
Beatty's.		\$ 100 to 120
1 2 3 4 5 6 7 8		\$ 100 to 120
Hart Mfg. Co.		\$ 100 to 120
2 3 4 5 6 7 8		\$ 100 to 120
\$ 100 to 120		\$ 100 to 120
CUN OPENERS.		\$ 100 to 120
Messager's Comet.		\$ 100 to 120
American.		\$ 100 to 120
Lyman's.		\$ 100 to 120
Poole.		\$ 100 to 120
No. 4, French.		\$ 100 to 120
Universal Expansive, each \$ 1.00.		\$ 100 to 120
Gimlet Bits.		\$ 100 to 120
" Diamond.		\$ 100 to 120
" Bee.		\$ 100 to 120
Double Cut Gimlet Bits.		\$ 100 to 120
" Shepardson's.		\$ 100 to 120
Ct. Valley Mfg. Co.		\$ 100 to 120
Hartwell's.		\$ 100 to 120
Douglas'.		\$ 100 to 120
Ives'.		\$ 100 to 120
Universal Expansive, each \$ 1.00.		\$ 100 to 120
Hollow Augers	Ives'.	\$ 100 to 120
Double Cut Gimlet Bits.	French Swift & Co.	\$ 100 to 120
"	Bonney's Adjust.	\$ 100 to 120
"	Lyman's.	\$ 100 to 120
"	Universal Expansive, each \$ 1.00.	\$ 100 to 120
Hollow Augers	American.	\$ 100 to 120
Double Cut Gimlet Bits.	French Swift & Co.	\$ 100 to 120
"	Bonney's Adjust.	\$ 100 to 120
"	Lyman's.	\$ 100 to 120
"	Universal Expansive, each \$ 1.00.	\$ 100 to 120
Hollow Augers	American.	\$ 100 to 120
Double Cut Gimlet Bits.	French Swift & Co.	\$ 100 to 120
"	Bonney's Adjust.	\$ 100 to 120
"	Lyman's.	\$ 100 to 120
"	Universal Expansive, each \$ 1.00.	\$ 100 to 120
Hollow Augers	American.	\$ 100 to 120
Double Cut Gimlet Bits.	French Swift & Co.	\$ 100 to 120
"	Bonney's Adjust.	\$ 100 to 120
"	Lyman's.	\$ 100 to 120
"	Universal Expansive, each \$ 1.0	



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A WEEKLY TRADE JOURNAL.

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Ice Cream Freezers.

<img alt="Illustration of a vertical door spring assembly with a central screw and two

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SHOE KNIVES.THE TRADE MARK, IN ADDITION  
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This machine presents all the advantages of a light and durable LAWN MOWER, and we believe has good qualities which cannot fail to be appreciated. It is the lightest machine in use, and all that is necessary to satisfy our customers of its superiority is to place it in competition with any other machine in the town in which they may reside.

Every machine warranted to work as represented.

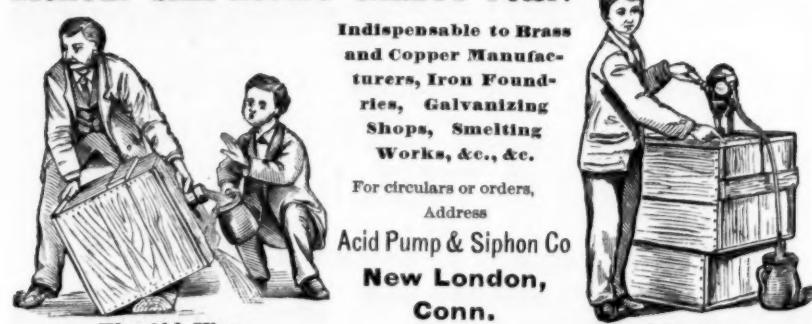
## PRICE LIST.

Width of Cutter.	Description.	Price.
12 inch.	8 in. driving wheel, wt. 33½ lbs. Can be used by a lad, each, \$18.00	
14 "	8 in. driving wheel, wt. 34½ lbs. Can be used by a lady. " 20.00	
16 "	8 in. driving wheel, wt. 36½ lbs. One man size. " 22.00	

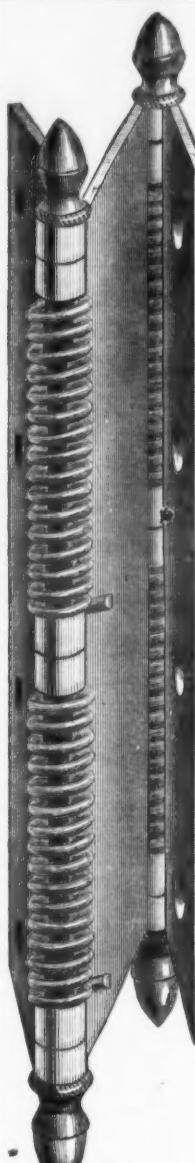
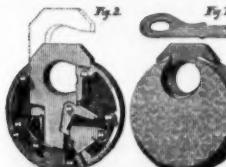
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SPRING HINGES  
WITH  
PATENT ANTI-FRICTION SPRINGS,  
FOR  
SCREEN DOORS.

PRICE LIST.—Per Dozen Pairs.

SINGLE JOINT HINGES.  
(To SWING ONE WAY.)

SIZE.	WITHOUT ACORN TIPS.		WITH ACORN TIPS.	
	BRASS.	NICKEL PLATED.	BRASS.	NICKEL PLATED.
2½ inch.....	\$ 3.00	\$ 4.50	\$ 5.00	\$ 6.50
3 " "	4.50	6.50	7.75	8.75
5 " "	7.50	10.00	10.00	12.50
4½x4½ inch.....	18.00	23.00	21.00	26.00

The 4½x4½ is Extra Heavy.

DOUBLE JOINT HINGES.  
(To SWING BOTH WAYS.)  
To be used on Door 1 inch thick, or less.

SIZE.	WITHOUT ACORN TIPS.		WITH ACORN TIPS.	
	BRASS.	NICKEL PLATED.	BRASS.	NICKEL PLATED.
2½ inch.....	\$ 6.60	\$ 9.00	\$ 11.50	\$ 14.25
3 " "	8.30	11.50	13.50	17.00
5 " "	16.50	21.00	21.50	26.00

The large cut represents full size of our 5 inch Double Joint Acorn Tip Hinge for mortising.

The small cut represents the plain Single Joint Hinges, but not full size.

Liberal Discount to the Trade.

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New Haven, Conn.

## IVES' PAT. TAP BORERS.



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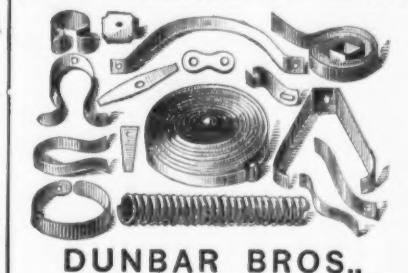
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Manufacturers ofLake Huron Amherst  
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Manufacturers of  
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Lake Huron, Mich.Importers of  
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Send for price list.BOYD & CHASE  
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Of all description.  
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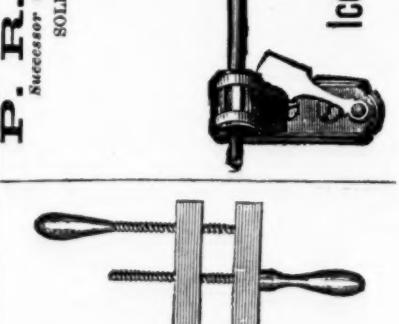
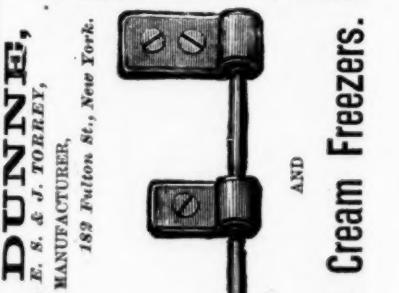
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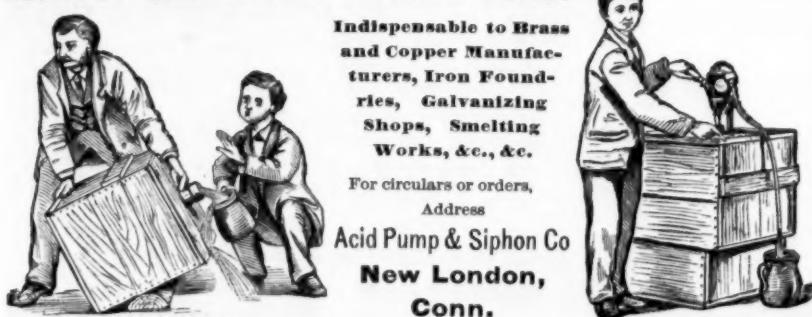
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Width of Cutter.	Description.	Price.
12 inch.	8 in. driving wheel, wt. 33 1/2 lbs. Can be used by a lad. each, \$18.00	
14 "	8 in. driving wheel, wt. 34 1/2 lbs. Can be used by a lad. " 20.00	
16 "	8 in. driving wheel, wt. 36 1/2 lbs. One man size....." 22.00	

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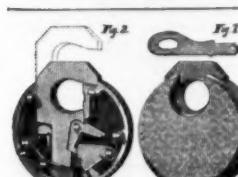
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## SPRING HINGES WITH PATENT ANTI-FRICTION SPRINGS, FOR SCREEN DOORS.

PRICE LIST.—Per Dozen Pairs.  
**SINGLE JOINT HINGES.**  
(To swing one way.)

SIZE.	WITHOUT ACORN TIPS.		WITH ACORN TIPS.	
	BRASS.	NICKEL PLATED.	BRASS.	NICKEL PLATED.
2 1/2 inch.....	\$ 3.00	\$ 4.50	\$ 5.00	\$ 6.50
3 " "	4.50	6.50	6.75	8.75
5 " "	7.50	10.00	10.00	12.50
4 1/2 x 4 1/2 inch.....	18.00	23.00	21.00	26.00

The 4 1/2 x 4 1/2 is Extra Heavy.

**DOUBLE JOINT HINGES.**  
(To swing both ways.)  
To be used on door 1 inch thick, or less.

SIZE.	WITHOUT ACORN TIPS.		WITH ACORN TIPS.	
	BRASS.	NICKEL PLATED.	BRASS.	NICKEL PLATED.
2 1/2 inch.....	\$ 6.60	\$ 9.00	\$ 11.50	\$ 14.25
3 " "	8.30	11.50	13.50	17.00
5 " "	16.50	21.00	21.50	26.00

The large cut represents full size of our 5 inch Double Joint Acorn Tip Hinge for mortising.

The small cut represents the plain Single Joint Hinges, but not full size.

Liberal Discount to the Trade.

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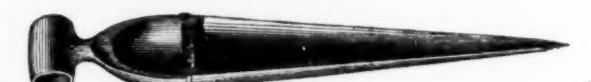
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**IVES' PAT. TAP BORERS.**



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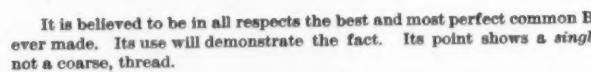


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Ives' Extra Cast-Steel Auger Bit.

(Old Style.)



It is believed to be in all respects the best and most perfect common Bit ever made. Its use will demonstrate the fact. Its point shows a single, not a coarse, thread.



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**OIL STONE**

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26c. 23c. 21c. 20c. 19c. 18c per lb.

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Retail Yard on D. L. & W. Railroad, cor. Grove and 19th Sts., Jersey City. Coal delivered direct from Shuttles Carts and Wagons. Families and manufacturers supplied with the highest quality coal at the lowest rates.

OFFICES At Yard cor. Grove and 19th Sts., Jersey City; Room 33, 111 Broad St. and Newark Ave., Jersey City; Room 33, 111 Broad St. and Hudson Sts., Hoboken. P. O. Box 47, Hoboken.

## OLD COLONY RIVET WORKS,

KINGSTON, MASS.,

MANUFACTURERS OF

Rivets, Hand Iron Cutters, Punches, Shears, and Planing and Shaping Machines  
Universal Ratchet Drills, and Patent Tinner's Snips.

New York Warehouse, 116 Chambers Street.

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OFFICE AND WORKS:

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**VALVES.**

Double and Single Gate, 1/4 in. to 48 in.—outside and inside Screws, Indicator, &c.  
for Gas, Water and Steam. Send for Circular.

Also FIRE HYDRANTS.

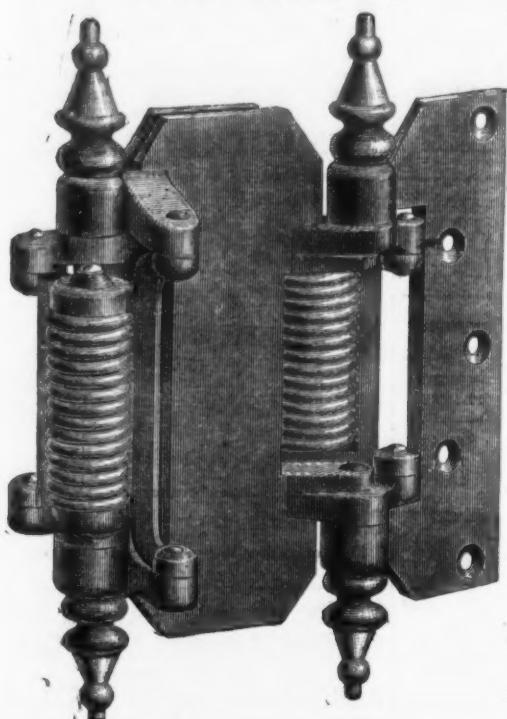


**WHEELING HINGE CO.,**  
Wheeling, West Va.,  
Manufacturers of

Wrought Butts, Strap & T Hinges, Wrought Hooks,  
Hasps & Staples, Wrought Repair  
Links & Washers,

GRAHAM & HAINES, Sole Agents, 113 Chambers & 95 Reade Sts., N. Y.

**Spring Butts for Screen Doors,**  
ON A NEW PRINCIPLE, THE MOST DESIRABLE.



**POINTS OF SUPERIORITY:**

They exert their greatest force at the closing point.  
They will not allow the door to sag.

They will retain the door against the wall when opened back of a right angle.

Single acting, for swinging doors one way, 100¢ or 1 in. thick, per pair ..... \$1.25  
Double acting, for swinging doors both ways, per pair ..... 2.00  
Liberal discount to the trade.

Send for circulars and prices.

MANUFACTURED SOLELY BY THE

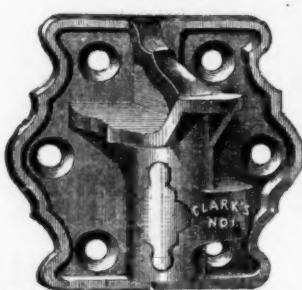
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Unionville, Conn., U. S. A.  
We can also furnish all sizes of larger Butts, working on same principle.

AGENTS:  
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**CLARK & CO.,**

MANUFACTURERS OF



**BUILDERS' HARDWARE.**

426 and 428 Niagara Street,  
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TENNIS & WILSON, Agents,  
Send for Catalogue and Price List.

**"FELTER'S PATENT LOCKS,"**  
MANUFACTURED BY

**The American Lock Mfg. Co.,**

Are the most SECURE and DURABLE ever made.

**SECURE**

Because they have 40 Brass Tamblers, independent in their action, either one of which will prevent the lock from being opened unless brought to proper position by the Key.

**DURABLE**

Because we use no Springs to break or get out of place.

THEY HAVE

**STERLING METAL KEYS**

That will not corrode or wear, and are stronger than steel.



FULL SIZE OF KEY.

**Upright Rim Dead Locks,**

**Horizontal Rim Night Latches,**

**Horizontal Rim Tubular Night Latches,**

**Mortise Night Latches, Plain Fronts,**

**Mortise Night Latches, Ornamental Bronze**

Fronts and Knobs,

**Brass Chest, Box, Cupboard and**

**Drawer Locks,**

**Solid Bronze Padlocks,**

Illustrated Catalogue and

Price List sent on application.

All orders should be addressed

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**UNION NUT CO., General Agents, 99 Chambers St., N. Y.**

**Mica and Porcelain Materials.**

**THE CHESTER MICA AND PORCELAIN CO.**  
OFFER

**Mica of the Best Quality,**

**Feldspar of highest Standard and Purity,**

**Quartz, the Finest, Whitest, Best.**

**Kaolin, Asbestos and Baryta.**

**Best Terms, Wholesale and Retail.**

Address, CHESTER MICA AND PORCELAIN CO., 87 Liberty St., New York.



Established in 1839.

**A. G. COES & CO.**

**WORCESTER,**

**Mass.,**

Manufacturers of

THE GENUINE

**COES'**

**SCREW WRENCHES.**

Our goods have been very much improved recently by making the Bar wide, as shown in the cut, which makes a 12 in. Wrench as strong as a 15 in. made in the ordinary way, and by using

A. G. COES'

NEW PATENT

**FERRULE**

Which cannot be forced back into the handle.

Our goods are manufactured under Patents dated February 7, 1860, (re-issued June 29, 1871), May 2, 1871, and Dec. 26, 1871, and any violation of either will be vigorously prosecuted.

We call particular attention to our new Patent Ferrule, with its supporting Nut (shown in section in the above cut), which makes the strongest Ferrule fastening known.

**A. G. COES & CO.**

Our Agents, GRAHAM & HAINES, 113 Chambers St., New York, carry a full line of our goods, and will be pleased to serve you at factory prices.

**N. Y. MALLET and HANDLE WORKS**



Manufacturers of  
Calkers', Carpenters', Stone Cutters', Tin, Copper and Boiler Makers' MALLETS.

Hawking Beetles, Hawking and Calking Irons also all kinds of Handles, Sledge, Chisel and Hammer Handles, etc.

COTTON AND BALE HOOKS, Patented Feb. 13, 1871; a new combination of Hooks, 436 E. Houston St., New York City.

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**BRASS Pad Locks,**

Railroad Switches, Freight Cars, and the Hardware Trade. All sizes, with Brass and Steel Keys, with or without chains.

Passenger Car Locks, Bronzed, Nickel-Plated and Japanned.

Patent Tubular Night Latches.

Will answer for Doors from 1/4 to 2 inches.

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Manufacturers of Patent Scandinavian or Jail Locks, Brass Pad Locks for Railroads and Switches. Also Patent Stationery, R. R. Car Door Locks, Patent Piano and Sewing Machine Locks, etc.

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Manufacturers of

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House, Tea, Hand, Gong Bell &c. Bell Metal Kettles.

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Manufacturers of Copper, Brass, and Iron Rivets; Common and Swedish Iron, Leather, Carpet, Lace and Glass Tacks; Finishing Hinges; Tin, Cloth and Carpet Box Nails, &c. Rivets made to Order.

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HARDWARE.

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Agents for the Philadelphia Star, Carriage and Tire, Bolts

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American and Foreign

Hardware and Cutlery Manufacturers' Agents,

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Represent and carry in stock a full line of the following manufacturers' goods, which we offer to the Trade at manufacturers' prices and terms:

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Meriden Britannia Co., Plated Ware and Britannia Spoons.

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Nicholson File Co., Saranac and International Horse Nails.

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As complete as can be found in any house. Also full stock of

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Full line of

**REVOLVERS AND CARTRIDGES.**

And a general assortment of

**SHELF AND HEAVY HARDWARE.**

Orders filled promptly from stock.

Consignments of desirable goods solicited.



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MANUFACTURERS OF

**COACH SCREWS**

(With Gimlet Points),

ALL KINDS OF

**Machine and Plow Bolts,**

**FORGED SET SCREWS,**

AND

**TAP BOLTS.**

**THE PERFECT SASH TIGHTENER AND LOCK.**

Fig. 1



Manufactured entirely from Malleable Iron, Burglar Proof, Anti-Battling, Draws Sash to Exact Center. No Springs to Get out of Order.

The Best in the Market.



**VALLEY MACHINE CO.**  
**STEAM PUMP**

Manufacturers,  
Wright's Patent. Easthampton, - Massachusetts. Mayher's Patent.

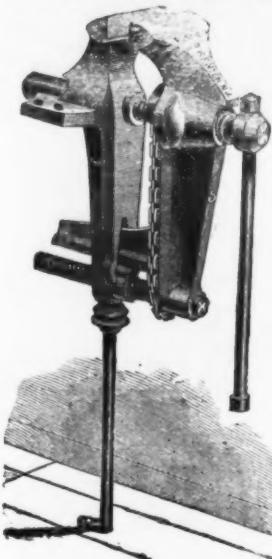
**Knowles' Patent Improved Mining Pumps.**

For draining  
COPPER, LEAD,  
GOLD, SILVER,  
IRON or COAL  
MINES.

AT THE  
CENTENNIAL EXHIBITION  
Five Medals of Honor  
were awarded these  
Pumps for superi-  
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Pumps of capacity of over one million gallons per day are now delivering water through 600 feet vertical column, working entirely without shock or jar, the entire stoppage of Pump aggregating less than twelve hours per year.

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Knowles' Steam Pump Works,  
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**The Double Screw Parallel "Leg" Vise**

**Stronger** than any other, whether of Foreign or of American make; always parallel and holding with a tighter "grip". The jaws are of convenient shape for the most difficult work, equally well for filing or chipping. Instead of the heavy, clumsy formed jaws of the cast iron Single Screw Vises of the common "parallel" type.

Our Vise combines all the advantages of the "Peter Wright" Leg Vise, of strength and lightness, fastening to the floor and bench, and a tool box which can be attached to it, and has a chain which holds the points of opening, and never gets out of line. We now warrant this Vise for three years from date of manufacture stamped upon each.

The Jaws are of best Tool Cast Steel, welded on, file cut and properly tempered. The upper screw is of large diameter, and is made to fit solid cut thread boxes. The lower screw maintains the parallel position of the two jaws, by having exact motion with the upper working screw through the connecting chain which regulates it. The chain has no strain of the work upon it, and is therefore as durable as all the other parts.

**REDUCED PRICE LIST.**  
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All sizes of these Vises furnished with Swivel Attachment at same price.

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**HERMANN BOKER & CO.,**

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SOLE AGENTS FOR

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Patent Improved

**HORSE CLIPPERS.**

The cutting parts are made of the very best English Cast Steel. The upper knife passes over two teeth. There is a protecting plate which gives the Clipper great strength. The iron parts of the handles are all wrought, not malleable, iron, and adjusted so that there is no danger of the handles getting broken. Every Clipper is carefully examined before leaving the factory. Quick and easy working can be guaranteed.

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MIDDLETOWN, - - - NEW YORK.**

Manufacturers of

**WARRANTED CAST STEEL****SAWS**

Of every description, including

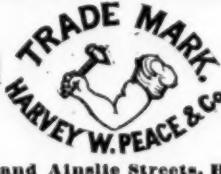
Circular, Shingle, Cross-Cut, Mill, Hand,  
WOOD SAWs, Etc.. Etc.

**Harvey W. Peace, Vulcan Saw Works.**

Manufacturer of every kind of

Patent Ground  
SAWS.

Union Avenue, Tenth and Alinslie Streets, BROOKLYN, E. D., N. Y.

**AMERICAN SAW CO.,**

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Movable Toothed Circular Saws,  
PERFORATED CROSS-CUT SAWs  
And SOLID SAWs of all kinds.

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SOLE OWNERS AND MANUFACTURERS OF

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**RUBBER BUCKETS, PUMP CHAIN  
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For Chain Pumps.



PAT. OCT. 13, 1878.  
PAT. FEB. 22, 1876.  
REIS. JUNE 12, 1877.

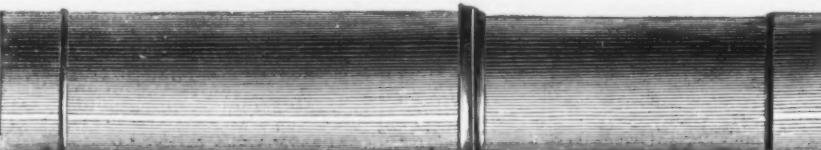
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**THE GRAHAM ADJUSTABLE STOVE PIPE.**

(Pat. Jan. 9, 1878.)

Medal Awarded at American Institute, 1877.

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Sole Manufacturers,  
BUFFALO, N. Y.

**FIRE HYDRANTS****Eddy Valves.**

All Styles and Sizes.

Made (and patents owned) by

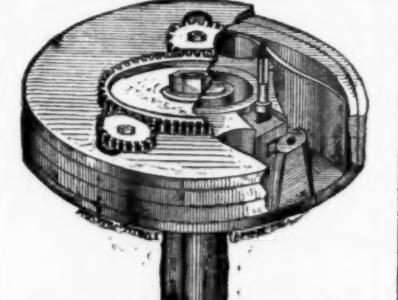
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Steam Engine Piston.

The rings are expanded without removing the cylinder head. Guaranteed to save 10 per cent. over any now in use. Special attention given to repairing, improving, &c. Send for circular and price list.

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The Best and Cheapest Non-Conductor or Insulator of Heat  
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**SUPPLIES**

FOR  
Railways, Machinists and Amateurs,  
Gum and Leather Belting, Packings and Cotton  
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FINE TOOLS  
for Machinists and Amateurs; Barnes' Foot Power  
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Machinery. Send for Price Lists.

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**The Eclipse Steam Pump.**

(Patented May 17, 1878.)

A New, Cheap and Simple Boiler Feeder.

This differs from any Pump of its class by doing away with a sliding box or strap, and supplying the places of the same by a hardened steel roller and steel pin. By this construction a great amount of friction is avoided. It is durable, handy and cheap. Any one of ordinary intelligence can successfully operate it. Prices range from \$45 upwards.

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**FLORENCE OIL STOVES.**

THE ONLY SAFE, DURABLE AND  
ODORLESS OIL STOVE

MADE.



EXAMINE THIS AND BUY NO  
OTHER.

LIBERAL DISCOUNTS TO THE TRADE.

SEND FOR CIRCULAR.

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**THE FLORENCE MACHINE COMPANY,  
Florence, Mass.**

PRINCIPAL OFFICES: 39 Union Square and 42 Murray Street, New York; 476 Washington St., Boston; 59 State St., Chicago; 1210 Ridge Ave., Philadelphia; 84 Wood St., Pittsburgh, Pa.; 67 Arcade, Providence, R. I.; 267 Middle St., Portland, Me.

**THE MACKENZIE PATENT  
CUPOLA & BLOWER.**

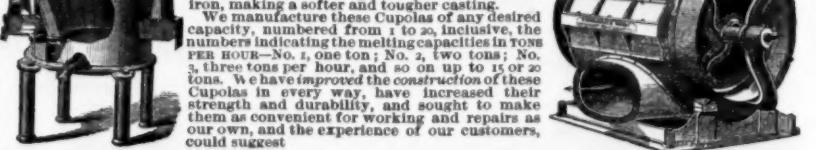
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Smith & Sayre Mfg. Co.,

PROPRIETORS, 21 Cortlandt St., New York.

This Cupola has made a great revolution in melting Iron. It differs from all others in having a CONTINUOUS TUYERE, or in other words, the blast enters the fuel at all points. One ton cast iron per hour is melted for 100 lbs. coal. The blast is directed to the center of the furnace, with the least resistance and smallest possible amount of power, and in combination with the continuous Tuyere causes complete diffusion of the air throughout the furnace, and uniform temperature, melting ten or fifteen tons an hour with the pressure of blast required to melt five tons in the old式 Cupola. It is a great saving in fuel, saving largely in time and fuel, the experience of our customers showing a gain of twenty-five to fifty per cent. in time, and twenty-five to forty per cent. fuel over the ordinary Cupola, and a BETTER QUALITY OF CASTING, lighter work. This is due to the thorough diffusion of the air and more perfect combustion, extracting less carbon from the iron, making a softer and tougher casting.

We manufacture these Cupolas of any desired capacity, number of tuyeres, &c. Below are the numbers indicating the melting capacities in TONS PER HOUR—No. 1, one ton; No. 2, two tons; No. 3, three tons per hour, and so on up to 15 or 20 tons per hour. These Cupolas, in our opinion, have in every way, increased their strength and durability, and sought to make them as convenient for working and repairs as our own, and the experience of our customers, could suggest.

**THE PEERLESS PORTABLE ENGINE,  
From 6 to 12 Horse-Power, and  
DOMESTIC Semi-Portable Steam  
Engine,**

From 2 to 4 Horse-Power.

The only Engines in the Market, attached to the Boiler, having  
COLD BEARINGS.

All parts interchangeable. Hardened connecting pins. Placed upon strong springs to produce easy carriage. Nothing cheap but the price. Send for Illustrated Catalogue and Price List to

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# NEW IRON TACKLE BLOCKS.

Norcross Patent.



Galvanized Malleable Iron Shell and Sheave, Steel Hooks, Steel Pins.  
Superior to Wood Blocks on account of not Checking  
and Cracking.

The Strongest, Lightest, Easiest Running and most Durable Block yet produced.

Send for sample and price list of same to



**Providence Tool Co.,**  
PROVIDENCE, R. I.

Or to J. H. Work, 13 Pearl St., Boston, Mass.; S. H. & E. Y. Moore, 68 Lake St., Chicago, Ill.; Henry B. Newhall, 11 Warren St., N. Y.

## THE PENFIELD BLOCK WORKS, Lockport, N.Y.

Manufacture



Leather Lining. Wood Body.

COPY. MILWAUKEE, July 5, 1878.  
M. H. Tarbox & Co.: Your postal of the 3d is at hand. We are selling the Faucets right along, and as far as we have learned all are pleased with them. Truly yours, H. Bosworth & Sons, Wholesale Drugs, &c.

CANNOT BE REMOVED EXCEPT  
WHEN LOCKED.

## THE HP HORSE NAIL CO.,

Cleveland, Ohio.

These Nails

are manufactured from the

Best Selected Stock.



These Nails

ARE

Guaranteed to be Equal

Send for circulars showing dis-

counts.

5d 6d 7d 8d 9d 10d

26c. 23c. 21c. 20c. 19c. 18c.

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## HORSE NAIL CO.

ESTABLISHED IN 1862,

### Hammered & Finished Horse Nails.

We offer our Finished Nail to the trade with the confidence that it has no equal in the market. It is the genuine "Northwestern" Nail, Finished, and we give it our unqualified guarantee.

Office and Factory, 56 to 68 Van Buren St., Chicago.

A. W. KINGSLAND, Secretary.

Our agents, Graham & Haines, 113 Chambers Street, New York, carry a full line of our goods, and will be pleased to serve you at factory prices.

## GLOBE NAIL COMPANY,

MANUFACTURERS OF

### Pointed Polished & Finished Horse Shoe Nails.

Recommended by over 20,000 Horse Shoers.

All nails made from best NORWAY IRON, and warranted perfect and ready for driving. Orders filled promptly and at lowest rates by

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OFFICE, 81 Canal Street, Providence, R. I.

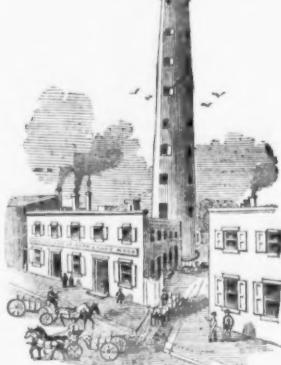
WORKS at Valley Falls, R. I.

Manufacturers of

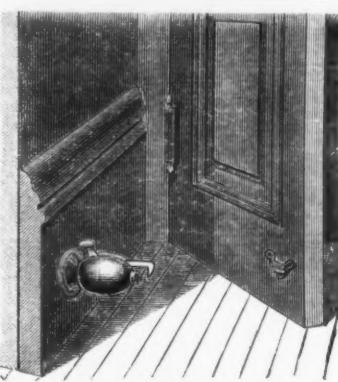
PERKINS and RHODE ISLAND PATTERNS of

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## The Oldest Shot Tower in America. FOUNDED JULY 4, 1808.



**THOMAS W. SPARKS,**  
Manufacturer of  
**SPARKS'**  
**American Chilled Shot,**  
Rivaling the English and all Others.  
**STANDARD DROP & BUCK SHOT  
AND BAR LEAD.**  
121 Walnut Street, Philadelphia.



The Perfect  
**DOOR STOP AND HOLDER,**  
Will catch and hold the door every time, and no wind can blow it loose. It saves the wall, the paper, glass and slamming of doors. **Liberal Discount to the Trade.** Address, SPENGLER & CO., East End, Pittsburgh, Pa.



**WESTON DYNAMO-ELECTRIC MACHINE**  
**NICKEL.**

The rapid increase in the use of Nickel-Plating owing to the introduction of the Weston Machine and the very low price of nickel material, enables us to give greatly reduced estimates for complete outfitts. We are furnishing outfitts specially adapted for Stove Work, giving a pure white deposit on plain or mat surfaces. Outfits complete, with Dynamo-Electric Machine, Tanks, Anodes, Solution, &c., &c., \$250. We beg to refer to the following Stove Manufacturers among so many others using the Weston Machine: Richardson & Boynton, S. S. Jewett & Co., Detroit Stove Works, Michigan Stove Co., Cooperative Stove Co., E. & C. Gurney, Hamilton & Toronto, and many others.

### INFRINGEMENTS.

We call attention to infringements of the Weston Machine, in which Automatic Switches are used to prevent change of current. The Weston Co. are owners by grant or purchase of all forms of Automatic Switches for Plating Machines. The adoption of these machines will certainly lead to great loss to parties purchasing or using them.

**CONDIT, HANSON & VAN WINKLE**  
Sole Agents NEWARK, N.J. U.S.A.

**GEO. W. JACKSON,**  
Successor to S. S. OWEN & CO.

## Nickel Plater

And Polisher of all kinds of Metals,  
211 East 23d Street, bet. 3d and 4th Avenues,  
NEW YORK.

**NICKEL.**

Solder, Lead, Block Tin, and other  
Foundry Metals. Cut Nails.

**A. T. COLT,**  
Nickel-Platers' Supplies.

ARMATURE ELECTRO-PLATERS' MACHINES,  
PURE NICKEL in grain,  
Anodes, Sulphates and  
Chloride.  
COBALT, metallic & sul-  
VIENNA LIME, CROCUS,  
Silver 1,000 pure granulated or rolled. Gold and Pla-  
tinum rolled to order.

**NICKEL PLATING.** PHILADELPHIA.  
37½ N. 7th St.  
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Reported by Macomber, Bigelow & Dowse, 156 o 164  
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**Corn Shellers.**—Sandwich Mfg. Co.—Power Shellers..... dia 10 \$  
Hand Shellers..... Special rates

**Cotton Gins.**—Carver, with 10 and 12 in. Saws, new net wholesale reduced list.

**Cultivators.**—"Buckeyes" 4 shovel..... 3 . . . . . \$29 25

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**Holes.**—Black Diamond, Mill Board, dia 3 1/2

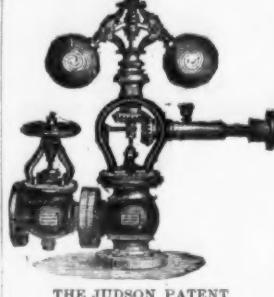
**Holes.**—Taper..... dia 3 1/2



**Machinery, &c.****THE JUDSON GOVERNOR.**

It is a common method to advertise Governors *without cost*, unless satisfactory to the customer, and then charge *High Prices* for doing what any good Governor will do. Various Governors inferior to the "Judson" are sold in this way, operating well enough for a short time, but failing in the construction after the exhaustion of the pay, but becoming useless after a year's wear—their construction lacking durability. The Judson Governor is guaranteed to be not only the best Regulator of Steam Engines, but also the most durable Governor made. Parties in buying other Governors should stipulate that they shall be guaranteed, and should also take care that they do not, for much inferior Governors, pay higher prices than those shown in the accompanying list. We guarantee the Judson Governor will do all any other Governor can do, and in accuracy and durability—the main essentials—we guarantee it shall do more.

Reduced Price List, FEBRUARY 1, 1877.						
For dimensions of Governor, see Illustrated Price List.						
<i>Size, Inch.</i>						
1	\$16.00	\$18.00	\$1.90	...		
1 1/4	18.00	20.00	1.90	...		
1 1/2	20.00	22.00	2.00	...		
1 3/4	23.00	25.00	2.00	...		
2	26.00	30.00	2.50	...		
2 1/4	31.00	35.00	2.75	10.00		
2 1/2	36.00	41.00	3.25	12.00		
2 3/4	40.00	45.00	3.50	14.00		
3	50.00	57.00	4.25	19.00		
3 1/2	59.00	67.00	4.50	23.00		
4	69.00	78.00	5.00	28.00		
4 1/2	80.00	90.00	5.50	34.00		
5	90.00	105.00	6.00	40.00		
5 1/2	102.00	117.00	6.25	46.00		
6	120.00	133.00	7.00	54.00		
6 1/2	142.00	156.00	8.00	65.00		
7	175.00	192.00	9.00	75.00		
8	198.00	218.00	10.00	85.00		
9	210.00	240.00	12.00	95.00		



No Charge for Boxing or Cartage.  
**JUNIUS JUDSON & SON, Rochester, N. Y.**

**PRESSES, DROP HAMMERS, DIES, And Other Tools**

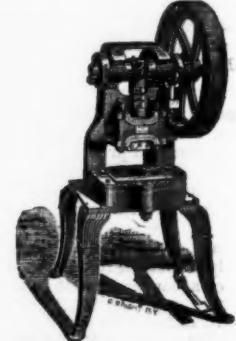
FOR THE MANUFACTURE OF ALL KINDS OF

**Sheet Metal Goods, DROP FORGINGS, &c.**

**The Stiles & Parker Press Co., MIDDLETOWN, CONN.**

**BLISS & WILLIAMS,**

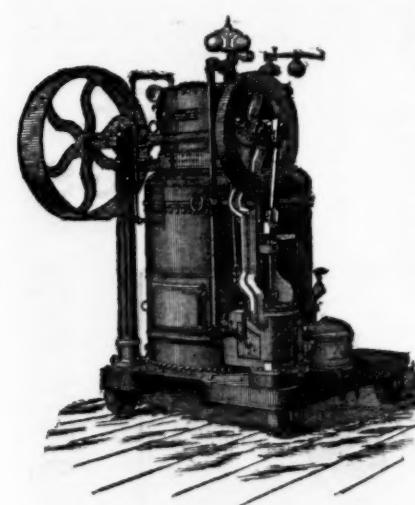
Manufacturers of all kinds of

**Presses, Dies and Special Machinery**

FOR WORKING SHEET METALS, &c.

**Fruit and other Can Tools.**

167 to 173 Plymouth St., corner of Jay, Brooklyn, N. Y., and Paris Exposition, 1878.

**SHAPLEY ENGINE.**

Patented Feb. 10, 1874.  
Reissued June 22, 1875.

Compact, Practical, Durable and Economical.

Acknowledged to be the best in use. This boiler stands unrivaled.

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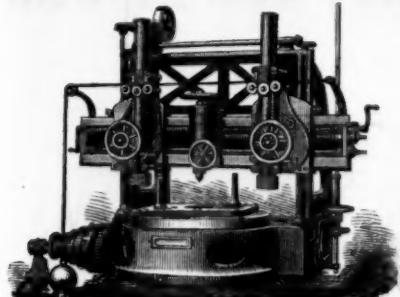
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Also Machinery for Mills of all kinds and Tanneries. Also their celebrated Bark Mills, acknowledged to be the best. Send for reduced price list circular.

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Special Pulley Turning Machinery, Engine Lathes, Iron Planers, Universal Radial Drilling Machines, Hydrostatic Presses, Car Axle Lathes and Wheel Borers. Latest designs and patterns. Prices very reasonable.

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Hamilton, Ohio.

**Machinery, &c.****Reduced Price List,**

FEBRUARY 1, 1877.

For dimensions of Governor, see Illustrated Price List.

Size, Inch.	Plain.	Bright Finish'd.	Extra Valve.	Stop Valve.
1	\$16.00	\$18.00	\$1.90	...
1 1/4	18.00	20.00	1.90	...
1 1/2	20.00	22.00	2.00	...
1 3/4	23.00	25.00	2.00	...
2	26.00	30.00	2.50	8.00
2 1/4	31.00	35.00	2.75	10.00
2 1/2	36.00	41.00	3.25	12.00
2 3/4	40.00	45.00	3.50	14.00
3	50.00	57.00	4.25	19.00
3 1/2	59.00	67.00	4.50	23.00
4	69.00	78.00	5.00	28.00
4 1/2	80.00	90.00	5.50	34.00
5	90.00	105.00	6.00	40.00
5 1/2	102.00	117.00	6.25	46.00
6	120.00	133.00	7.00	54.00
6 1/2	142.00	156.00	8.00	65.00
7	175.00	192.00	9.00	75.00
8	198.00	218.00	10.00	85.00
9	210.00	240.00	12.00	95.00

**Machinery, &c.**

Established 1848.

**WM. SELLERS & CO.,**

600 Hamilton Street, PHILADELPHIA,

**Engineers, Iron Founders and Machinists.****RAILWAY SHOP EQUIPMENTS.**

Our Steam Hammers, Lathes, Planers, Drills and Bolt Cutters  
Are of Improved and Patented Construction.

**Railway Turning and Transfer Tables,  
SHAFTING & MILL GEARING, a specialty.****Pivot Bridges.**

GIFFARD'S INJECTOR--IMPROVED, SELF-ADJUSTING.



Issues Policies of Insurance after a careful inspection of the Boilers.

COVERING ALL LOSS OR DAMAGE TO

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**STEAM BOILER EXPLOSIONS.**

The Business of the Company includes all kinds of STEAM BOILERS.

Full information concerning the plan of the Company's operations can be obtained at the

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The cheapest and best galvanized Lemon  
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STEAM PUMPS for Pumping, Fire Purposes, and Boiler Feeding.  
Also VALVES PIPING and VISES.  
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**The Albany Steam Trap.**  
This Trap automatically drains the water of condensation from Heating Coils, and returns the same to the Boiler whether the Coils are above or below the water level in Boiler, thus doing away with pumps and other mechanical devices for such purposes. Apply to

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**Machinery, &c.****Corliss Engine Builders,  
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I also manufacture  
**BAXTER'S**  
New Portable Engine  
of 157 c. of one horse-power, com-  
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WATER.  
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True Merit and Excellence is the Basis of all Success.  
THE EUREKA STEAM AND HYDRAULIC PACKING.

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The results of a series of experiments  
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without reservation that it is the best article of  
that material, i.e. elastic, pliable, and does not be-  
come hard by use, consequently is

**TUBAL SMELTING WORKS,**  
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**PAUL S. REEVES,**  
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XXX	Genuine.....	85c	C.....	17c
XX	.....	88c	D.....	14c
X	.....	30c	E.....	12c
A	.....	25c	F.....	10c
B	.....	30c		

"Note.—The above are my standard mixtures, and have given satisfaction wherever used, but I am prepared to make Anti-Friction Metal of any quality or mixture desired by the purchaser."

INGOT BRASS. | OLD METALS AND TURNINGS WANTED. | BRASS CASTINGS.

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Established 1834.

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**IMPROVED STEEL CASTINGS.**

Under Hainsworth's Patents.

We make Castings practically free from blow-holes, of steel which is as soft and as easily WORKED AND WELDED as Wrought Iron, yet is STIFF, STRONG and DURABLE, with a TENSILE STRENGTH of not less than 65,000 lbs. to the square inch. In short, OUR CAST INGS UNITE THE QUALITIES OF STEEL AND WROUGHT IRON.

Wheels and Pinions, Dies and Hammer Heads, Engine and Machinery Castings of all descriptions, Railroad Frogs and Crossings, Plowshares, Moldboards and Landsides.

WE USE NO CAST IRON.

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**STEEL CASTINGS.**

A Substitute for Steel and Wrought Forgings.

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**STEEL CASTINGS**From  $\frac{1}{4}$  to 10,000 lbs. weight, solid, and true to pattern, or 3 times the strength of cast iron. Invaluable for Gearings, Blinds, Boxes, Dies, Hammerheads, Crankshafts for Locomotives, etc. Zinc Casting Shafts of this steel now running proved superior to wrought iron. Circulars and price lists free. Address CHESTER STEEL CASTINGS CO., Evelina St., Philadelphia, Pa.**Steel Castings,**

Light and heavy Steel Castings of superior metal, solid and homogeneous. All work guaranteed. Send for circular.

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See cut of Elevator Hoisting Machine in issue of July 18, 1876, page 40.

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## TRIAL OF THE IMPROVED LIGHTNING SAW.

The Emperor Dom Pedro, accompanied by Director General Goshorn, Superintendent Albert, and others, visited Machinery Hall, at the Centennial on the evening of June 28th. Among other things inspected, at the invitation of E. M. Boynton, of New York, they witnessed a trial of the New Lightning Saw, patented March 26, 1876. Two men, with one of these saws, cut off a sound log of gum-wood, one foot extreme diameter, in seven seconds, or at the rate of a cord of wood in five minutes. Messrs. Corlies, Morell, Lynch, and other members of the commission, witnessed the trials and timed the cutting. The Emperor remarked, That was fast, very fast cutting. Last evening the Emperor made another examination of the saw.—Philadelphia Press, June 30.

BOYNTON'S SAWS were effectually tested before the judges at the Philadelphia Fair, July 6th and 7th. An ash log, eleven inches in diameter, was sawed off, with a four-and-a-half-foot lightning cross-cut, by two men, in precisely six seconds as timed by the chairman of the Centennial Judges of Class Fifteen. The speed is unprecedented, and would cut a cord of wood in four minutes. The representatives of Russia, Austria, France, Italy, Spain, Belgium, Sweden, England, and several other countries, were present, and expressed their high appreciation.

Received Medal and Highest Award of Centennial World's Fair, 1876.

\$1000 Challenge was prominently displayed for six months, and the numerous saw manufacturers of the world dared not accept it, or test in a competition so hopeless.

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These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, case-hardened throughout, and not only combine all of the superior qualities of our Cylinder or Gas Pipe Wrenches, but also all requisite Combinations of a regular Nut Wrench, thus making a combination which has no equal.

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**BEMIS & CALL HARDWARE & TOOL CO., Springfield, Mass.****ROD AND COIL****DOOR SPRINGS.**

Best Quality.

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